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HEAT IN US PRISONS AND JAILS

Corrections and the Challenge of Climate Change

By Daniel W. E. Holt

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EXECUTIVE SUMMARY

This paper addresses two important but largely neglected questions: How will increased temperatures and heat waves caused by climate change affect prisons, jails, and their staff and inmate populations? And what can correctional departments do to prepare for greater heat and minimize the dangers it poses?

Some 2.2 million inmates are currently incarcerated in around 1,800 prisons and jails across the United States. Nearly half a million correctional employees work in these facilities. Indoor environmental conditions in prisons and jails therefore have a direct impact on the health of well over 2.5 million people.

Climate scientists forecast with a high degree of confidence that average temperatures in the US will rise throughout this century and that heat waves will become more frequent, more severe, and more prolonged. Extreme heat is already the most common cause of weather-related death in the US and it will only become a graver threat to public health in the coming decades.

Rising temperatures and increasingly harsh extreme-heat events will jeopardize the health of inmates and correctional officers alike, and will stress the physical plant of the correctional sector. Adapting their systems and facilities to greater heat and the other impacts of climate change will become an urgent challenge for correctional departments. The success or failure of correctional adaptation efforts will be measured in human lives as well as public dollars.

Until now, the implications of climate change for corrections have been largely disregarded by both correctional administrators and public officials working on climate adaptation policy. This paper begins the process of connecting the discussions of climate policy and correctional policy. It provides an overview of the correctional sector and its specific vulnerabilities to heat, explores relevant legal issues, and offers recommendations for adaptation to address unique challenges that climate change poses for corrections.

Key Features of the Correctional Sector

Several key features of the correctional sector shape how it will likely be affected by increasing heat and how adapting to higher temperatures will test correctional departments:

- **The correctional sector spans diverse jurisdictions, each with its own systems and facilities, laws and policies.** The federal government and all 50 states operate prison systems. Nearly 3,000 individual jurisdictions, including counties, cities, and Indian tribes, operate jails.
- **Correctional facilities vary greatly by size, age, architecture, and security level.** Most prisons and jails were built since the phenomenon of mass incarceration began in the 1980s, but hundreds predate World War II, including around a hundred built in the nineteenth century that still house inmates. Older facilities have been added to and altered in hodgepodge fashion over the decades.
- **Close quarters and mass incarceration mean high population density in correctional facilities.** Overcrowding is a significant problem, with dozens of state prisons and hundreds of jails under court orders or consent decrees to reduce inmate populations.
- **Risk factors for succumbing to heat-related illness, including advanced age, poor mental and physical health, and the use of medications, are prevalent among the 2.2 million US inmates.** The inmate population is graying, with one in ten prisoners now 55 or older. Inmates over 50 are generally much less healthy than their peers in the outside world. Mental illness is widespread among inmates of all ages. Obesity, hypertension, and asthma are commonplace. Large numbers of inmates take medications that compromise the body's ability to handle heat.
- **Heat is already causing serious harm to inmates and correctional officers.** Heatstroke and other heat-related illnesses have claimed the lives of numerous inmates in recent years, while correctional officers in several prisons have suffered from heat stress.

Key Legal Issues and Findings

Correctional departments that fail to protect inmates and staff from extreme heat face the prospect of costly legal consequences. Existing policies and regulations are generally inadequate to ensure that temperatures remain within a healthy range. This paper's key findings include:

- **The US Constitution may require correctional departments to undertake adaptation efforts to mitigate the impacts of climate change.** It is now well established that high cell temperatures can constitute Cruel and Unusual Punishment. Federal courts have ordered correctional departments to reduce and control temperatures in inmate housing to remedy constitutional violations. Financial considerations do not excuse noncompliance with court-ordered reforms where constitutional violations are found.
- **Inmates with disabilities that make them more susceptible to heat stress may have viable claims under the Americans with Disabilities Act.** Litigants have pushed courts to recognize impaired thermoregulation—the ability to regulate body temperature—as a disability under the ADA.
- **The US Department of Justice has shown an interest in excessive cell temperatures and has legal tools to protect inmates from extreme heat.** DOJ recently filed an amicus brief in support of inmates claiming that extreme heat subjected them to Cruel and Unusual Punishment. The Civil Rights of Institutionalized Persons Act empowers DOJ to investigate conditions of confinement that may violate the constitution and to initiate legal action to remedy any violations.
- **Correctional officers have legal protections against workplace hazards such as extreme heat.** COs exposed to extreme temperatures can turn to occupational safety and health laws. COs with disabilities that put them at greater risk of heat illness can demand reasonable accommodations under the ADA.
- **Many jurisdictions have some policies or regulations governing temperatures in inmate housing but many do not.** Existing policies and regulations vary widely. A compilation is provided as an appendix to this paper.
- **The Federal Bureau of Prisons is required by executive order to conduct climate change adaptation planning but little is required in other jurisdictions.** Adaptation planning by DOJ encompasses the federal prison system. To date, no comparable requirements exist at state or local levels.

Key Recommendations

Like all sectors of government, corrections must begin to prepare for the impacts of climate change. Adaptation in corrections will involve surmounting some special challenges, including substantial security issues, atypical buildings with unusually high population density, uncertainty about future inmate numbers, and societal animosity toward inmates. This paper offers a number of recommendations to address these particular challenges, as well as more generic adaptation needs, including:

- **Reduce the size of the incarcerated population.** The looming challenge of adapting to the impacts of climate change dovetails with recent mainstream efforts to shift from mass incarceration toward more effective and less costly strategies to reduce crime and recidivism. Bringing down inmate numbers would advance adaptation by reducing security problems, lowering population densities, easing pressures on correctional budgets, and making it possible to retire problematic facilities.
- **Reduce inmates' and correctional officers' susceptibility to heat stress.** Acclimatizing inmates and COs to higher temperatures will reduce the likelihood of their succumbing to heat-related illness. As a short-term measure, heat-sensitive inmates should receive priority for housing in units where healthy temperatures can be maintained. Separate geriatric housing would also help address the greater overall health care needs of older inmates.
- **Phase out the most vulnerable facilities.** Adaptation needs should factor into decisions about closing obsolete or problematic facilities, and those that cannot be adapted at reasonable cost should be retired.
- **Retrofit adaptable facilities by maximizing passive cooling.** Proven passive-cooling solutions should be favored over mechanical air conditioning in order to capitalize on energy savings and minimize greenhouse gas emissions. Cool roofs, green roofs and walls, awnings, and advanced thermal windows are cost-effective options for cooling that can significantly reduce the need for air conditioning.

- **Build new sustainable, adapted, and resilient facilities.** The location, design, and construction of all new facilities should take into account future temperatures as well as other impacts of climate change. As part of this, environmental impact analyses should incorporate not only current climate conditions but foreseeable future conditions for the entire projected useful life of a facility.
- **Require adequate cooling of private facilities.** Future contracts with private entities that operate prisons or jails, and renewal of existing contracts, should require that healthy indoor temperatures be maintained.
- **Collaborate and cooperate.** Adaptation should not and cannot be an isolated effort. Correctional departments should work with one another, with other public agencies, and with private partners to share best practices and to take advantage of the considerable progress that has been made in some quarters.

The most important recommendation is to start now; the hour is already late. Adaptation, like climate change itself, is a long-term process, not an isolated event. If correctional departments put off beginning their adaptation efforts because of uncertainties about the details of specific climate impacts or apprehensiveness about the complexity of adapting, the task will only become more difficult and costly.

Adapting corrections to heat and other impacts of climate change is not a task for correctional departments alone. Just as correctional administrators should begin educating themselves about climate change and how it will affect their departments, so should policymakers, academics, and others who are already working on adaptation widen their compass to include corrections. This paper aims to help both efforts.

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CONTENTS

1	Introduction.....	1
2	Overview of the Correctional Sector.....	7
2.1	Jurisdictions and Administration.....	8
2.2	Existing Facilities.....	9
2.2.1	Number and Types of Facilities.....	9
2.2.1.1	Prisons.....	9
2.2.1.2	Jails.....	10
2.2.2	Overcrowding and Facilities Under Court Orders or Consent Decrees.....	11
2.2.3	Age of Facilities.....	13
2.2.4	Building Materials and Technologies.....	14
2.2.5	Expenditures on Construction and Maintenance.....	15
2.3	Inmate Populations.....	16
2.3.1	Location and Jurisdiction.....	17
2.3.2	Reasons for Incarceration.....	18
2.3.3	Prevalence of Risk Factors for Heat-Related Illness Among Inmates.....	18
2.3.3.1	Age.....	19
2.3.3.2	Mental Health.....	22
2.3.3.3	Physical Health.....	22
2.3.3.4	Drug Use.....	26
2.4	Correctional Staff Population.....	28
2.4.1	Size.....	28
2.4.2	Health.....	29
2.5	Correctional Reforms.....	31
2.6	Structural Vulnerabilities to Extreme Heat.....	32
3	Heat, Corrections, and the Law.....	33
3.1	Inmate Litigation.....	33
3.1.1	Constitutional Claims.....	33
3.1.1.1	Example 1: Mississippi State Penitentiary in Parchman, Unit 32.....	37

3.1.1.2	Example 2: Louisiana State Penitentiary in Angola, Death Row	42
3.1.2	Claims Under the Americans with Disabilities Act and the Rehabilitation Act.....	50
3.2	The Civil Rights of Institutionalized Persons Act	53
3.3	Legal Action by Correctional Officers	54
3.4	Policies and Regulations Concerning Heat and Climate Control in Corrections.....	59
3.5	Mandated Adaptation Efforts	62
3.6	The Legal Context for Adaptation.....	64
4	Adaptation Challenges and Options	65
4.1	The Basics of Adaptation	66
4.2	Special Challenges for Corrections.....	69
4.2.1	Security	69
4.2.2	Unique Buildings	71
4.2.3	Unstable Population Size	72
4.2.4	Unpopular Constituency	72
4.3	Options	73
4.3.1	Reduce the Size of the Incarcerated Population	73
4.3.2	Reduce Inmates' and Correctional Officers' Susceptibility to Heat Stress	75
4.3.2.1	Acclimatize Inmates and Correctional Officers to Heat	75
4.3.2.2	Segregate Inmates Based on Heat Sensitivity	77
4.3.3	Phase Out the Most Vulnerable Facilities.....	78
4.3.4	Retrofit Adaptable Facilities by Maximizing Passive Cooling.....	79
4.3.5	Build New Sustainable, Adapted, and Resilient Facilities.....	83
4.3.6	Require Adequate Cooling of Private Facilities	85
4.3.7	Collaborate and Cooperate.....	85
4.4	Adaptation Planning by the Federal Bureau of Prisons.....	86
5	Conclusion	89
Appendix: Policies and Regulations Concerning Heat and Climate Control in Corrections...		91

1 INTRODUCTION

To meet the challenges of climate change, all government institutions must take steps to reduce their carbon footprints and to adapt their facilities and practices to increasing temperatures, rising sea levels, more erratic and extreme weather, and a host of other impacts. While the correctional sector has begun to promote sustainability through energy efficiency, thereby contributing to the effort to mitigate the causes of climate change, it has paid little attention to the adaptation side of the equation. As a result, correctional departments across the country are largely unprepared for the operational difficulties they will face as our climate continues to change. Fortunately, climate change has not yet reached a pace that makes adaptation impossible. By thoroughly evaluating their vulnerabilities, identifying practical adaptive measures to address those vulnerabilities, and implementing those solutions before finding themselves in crisis, correctional departments can successfully meet the adaptation challenge without compromising public safety or the health of inmates and correctional workers.

In some respects, correctional departments are no different from other public agencies when it comes to climate change adaptation. Like other departments, corrections has buildings that may be vulnerable to flooding from rising seas and more severe storms. It relies on energy, water, and other essentials that are likely to become scarcer, more costly, and subject to disruption. Its employees' health must be guaranteed as temperatures rise and heat waves become more frequent, longer, and more severe. Government agencies of all kinds may solve these and other challenges in similar ways, and opportunities to share best practices abound.

But corrections also has exceptional characteristics that set it apart from the rest of the public sector. Correctional departments have large full-time residential populations and are responsible under the Constitution for those populations' basic needs: food, water, shelter, health, safety. They also must ensure public safety by guaranteeing that those in their custody remain in their custody. Security is a paramount concern that shapes every decision and practice by correctional administrators and employees alike. Security considerations limit the range of available emergency measures and make options such as evacuation exceptionally

difficult. These idiosyncratic features shape the correctional sector's specific vulnerabilities in the face of climate change and the adaptive solutions needed to address those vulnerabilities.¹

This paper focuses on adaptation of adult correctional facilities to handle increasingly severe heat waves and rising average summer temperatures. Many correctional systems already struggle to keep inmates and employees adequately cool in the summer, a task made all the more difficult by the high rates of physical and mental health problems among the inmate population. Some correctional departments, such as those in Texas, Mississippi, and Louisiana, already feel the pressure of inmate litigation because of their inability to maintain livable environments throughout the summer months. Without adaptation, these and other correctional systems are in danger of being entirely overwhelmed as climate change progresses. In other places, where handling summertime heat has not historically been so serious a problem, previously adequate equipment and systems will fail. There, too, correctional systems will have to take adaptive measures to adjust to the objective reality of the changing climate. With 1 out of every 110 adult residents of the United States incarcerated in a prison or jail at the end of 2013, for a total of over two million inmates, the stakes in human welfare are enormous.²

When correctional facilities are unable to maintain healthy interior temperatures and humidity levels during the summer months, even healthy inmates and correctional staff can suffer heat stress, including heat edema, heat syncope, heat cramps, heat exhaustion, and heatstroke, a potentially fatal condition.³ Several factors can increase the risk of death or serious harm from extreme heat, including age and underlying health. A person's capacity to adjust to

¹ To a large extent, the exceptional features of adult corrections apply to the juvenile-justice sector as well. Since the two systems are administratively and legally distinct in most jurisdictions, this paper does not cover juvenile justice directly, though some of its content does apply to that sector. As of late 2011, nearly 69,000 individuals 21 or younger were being held state juvenile facilities. See OFFICE OF JUVENILE JUSTICE & DELINQUENCY PREVENTION, NCJ 246826, JUVENILES IN RESIDENTIAL PLACEMENT, 2011, at 3 (2014), ojjdp.gov/pubs/246826.pdf.

² BUREAU OF JUSTICE STATISTICS, NCJ 248479, CORRECTIONAL POPULATIONS IN THE UNITED STATES, 2013, at 4 tbl.2 (2014), bjs.gov/content/pub/pdf/cpus13.pdf.

³ For a brief overview of how excess heat affects the body and of factors that increase the risk of adverse health effects from heat, see, e.g., Shakoob Hajat et al., *Health Effects of Hot Weather: From Awareness of Risk Factors to Effective Health Protection*, 375 LANCET 856–57 (2010). It bears noting that research on the health effects of excess heat has focused primarily on mortality as opposed to morbidity. See Katherine Marmon, *How Does a Heat Wave Affect the Human Body?*, SCI. AM. (July 23, 2010), scientificamerican.com/article/heat-wave-health.

changes in temperature diminishes with age. Heat can exacerbate chronic conditions such as respiratory and cardiovascular illnesses. Obesity places one at greater risk. Numerous common medications, including many frequently used to treat mental health problems, make one more susceptible to heat stress. These and other factors that increase the health risks of high heat affect the inmate population and, to a lesser degree, the population of correctional workers.

Another common consequence of heat in prisons has implications for both health and security, of inmates and correctional officers alike: the potential for increased violence. Fighting among inmates and assault incidents may increase when high temperatures cut tempers short.⁴

As shown below, the most recent and best analyses predict significant increases in average summer temperatures in the coming decades as well as more common, severe, and protracted heat waves. Since 1895, average temperatures in the United States have increased by 1.3 to 1.9°F, with most of that increase occurring since 1970.⁵ The first decade of this century was the warmest on record, 2014 was the warmest single year on record, and the nation's climate is only expected to become warmer.⁶

⁴ See, e.g., Clara Crowder, *Few Beat the Heat in State Prisons*, BIRMINGHAM NEWS, Aug. 28, 2005, at 17, 2005 WLNR 24090809 (quoting Alabama warden saying that “incidents of fights and assaults go up dramatically in summer months” and that, “When they’re all in, and it’s hot, one guy will ‘disrespect’ another guy and they’ll have a fistfight.”); Jimmy Nesbitt, *Air-Conditioned Jail “Not a Reward,”* COURIER & PRESS (Evansville, Ill.), Aug. 4, 2006, at B3, 2006 WLNR 27279592 (quoting county sheriff describing new air conditioning system as an “asset” that reduces likelihood of fighting among inmates). There is considerable evidence that hot weather can trigger increases in violent behavior outside the correctional context, though the relationship between heat and violence is complex. See, e.g., Solomon M. Hsiang et al., *Quantifying the Influence of Climate on Human Conflict*, 341 SCI. 1235367 (2013), sciencemag.org/content/341/6151/1235367.full.pdf; (reporting results of meta-analysis: “for each one standard deviation (1 σ) change in climate toward warmer temperatures . . . , median estimates indicate that the frequency of interpersonal violence rises 4% and the frequency of intergroup conflict rises 14%. Because locations throughout the inhabited world are expected to warm 2 σ to 4 σ by 2050, amplified rates of human conflict could represent a large and critical impact of anthropogenic climate change.”); Craig A. Anderson & Matt DeLisi, *Implications of Global Climate Change for Violence in Developed and Developing Countries*, in THE PSYCHOLOGY OF SOCIAL CONFLICT AND AGGRESSION 249, 250–56 (Joseph P. Forgas et al. eds. 2011) (analyzing relationship between heat and aggression).

⁵ J. Walsh et al., *Chapter 2: Our Changing Climate*, in CLIMATE CHANGE IMPACTS IN THE UNITED STATES: THE THIRD NATIONAL CLIMATE ASSESSMENT 28 (Jerry M. Melillo et al. eds., U.S. Global Change Research Program, 2014), nca2014.globalchange.gov/downloads.

⁶ *Id.*; *State of the Climate: Global Analysis for Annual 2014*, NOAA NAT’L CTRS. ENVTL. INFO. (Jan. 2015), ncdc.noaa.gov/sotc/global/201413.

Average temperatures are expected to rise 2 to 4°F in most areas of the country during the next few decades.⁷ Temperature increases of anywhere between 3 and 10°F are possible by the end of the century, depending on global emissions of greenhouse gases.⁸ States in the upper Midwest and Alaska may see rises of 10 to 15°F by 2099 if emissions continue to increase.⁹ Regardless of how much warming takes place, it will be neither uniform nor smooth across the country, given natural climate variations and our diverse geography.¹⁰

Climate change affects not only average summertime temperatures but also the frequency, severity, and duration of heat waves.¹¹ Heat waves are more frequent and intense than they used to be, especially in the western states, and the trend is expected to continue.¹² In the first decade of this century, heat waves in western regions broke historical records.¹³ In 2011 and 2012, the country experienced almost three times the long-term average number of intense heat waves.¹⁴ Those summers were the hottest on record in several states.¹⁵ New records were set for both hottest daytime maximum temperatures and warmest nighttime minimum temperatures, part of an increasing trend in persistently high nighttime temperatures that prolong heat waves and amplify their health impacts.¹⁶

⁷ J. Walsh et al., *Chapter 2: Our Changing Climate*, in CLIMATE CHANGE IMPACTS IN THE UNITED STATES: THE THIRD NATIONAL CLIMATE ASSESSMENT 29 (Jerry M. Melillo et al. eds., U.S. Global Change Research Program, 2014), nca2014.globalchange.gov/downloads.

⁸ *Id.*

⁹ *Id.* at 30, figure 2.9.

¹⁰ *Id.* at 28.

¹¹ See, e.g., CTRS. FOR DISEASE CONTROL & PREVENTION, CLIMATE CHANGE AND EXTREME HEAT EVENTS 8–9 (n.d.), cdc.gov/climateandhealth/pubs/ClimateChangeandExtremeHeatEvents.pdf.

¹² J. Walsh et al., *Chapter 2: Our Changing Climate*, in CLIMATE CHANGE IMPACTS IN THE UNITED STATES: THE THIRD NATIONAL CLIMATE ASSESSMENT 38 (Jerry M. Melillo et al. eds., U.S. Global Change Research Program, 2014), nca2014.globalchange.gov/downloads.

¹³ *Id.*

¹⁴ J. Walsh et al., *Appendix 3: Climate Science Supplement*, in CLIMATE CHANGE IMPACTS IN THE UNITED STATES: THE THIRD NATIONAL CLIMATE ASSESSMENT 770 (Jerry M. Melillo et al. eds., U.S. Global Change Research Program, 2014), nca2014.globalchange.gov/downloads.

¹⁵ J. Walsh et al., *Chapter 2: Our Changing Climate*, in CLIMATE CHANGE IMPACTS IN THE UNITED STATES: THE THIRD NATIONAL CLIMATE ASSESSMENT 38 (Jerry M. Melillo et al. eds., U.S. Global Change Research Program, 2014), nca2014.globalchange.gov/downloads.

¹⁶ *Id.* See also Katherine Harmon, *How Does a Heat Wave Affect the Human Body?*, SCI. AM. (July 23, 2010), scientificamerican.com/article/heat-wave-health (noting that deaths during heat waves increase when temperatures remain high overnight).

In the coming decades, record-setting heat waves will become increasingly likely and the annual number of extremely hot days is expected to keep growing. What were once rare summertime temperature extremes are projected to become commonplace, while extreme-heat days previously seen only once in a two-decade period are likely to occur once every two or three years by the end of the century.¹⁷

Extreme heat is already the most common cause of weather-related death in the US, killing more people each year than hurricanes, lightning, tornadoes, floods, and earthquakes combined.¹⁸ The number of heat-related deaths is rising and the risk of death or illness due to extreme heat is one of the key dangers that climate change poses.¹⁹ By the middle of the century, annual deaths attributable to extreme-heat events may well double.²⁰ While it is impossible to predict how many inmates and correctional staff will suffer or die from the heat, there is no doubt that these outcomes will become more frequent unless correctional systems take appropriate steps to adapt their facilities to handle increased cooling needs.

¹⁷ J. Walsh et al., *Chapter 2: Our Changing Climate*, in CLIMATE CHANGE IMPACTS IN THE UNITED STATES: THE THIRD NATIONAL CLIMATE ASSESSMENT 39 (Jerry M. Melillo et al. eds., U.S. Global Change Research Program, 2014), nca2014.globalchange.gov/downloads.

¹⁸ Ctrs. for Disease Control & Prevention, *Extreme Heat*, NAT'L ENVTL. PUB. HEALTH TRACKING, ephtracking.cdc.gov/showClimateChangeExtremeHeat.action (last updated July 1, 2014). Because heat-related deaths are very often attributed to causes such as cardiac arrest, the actual incidence of death due to heat is probably greater than mortality statistics indicate. See Ekta Choudhary & Ambarish Vaidyanathan, *Heat Stress Illness Hospitalizations: Environmental Public Health Tracking Program, 20 States, 2001–2010*, 63 MORBIDITY & MORTALITY WKLY. REP. SURVEILLANCE SUMMARIES, Dec. 12, 2014, at 1, cdc.gov/mmwr/pdf/ss/ss6313.pdf; Jonathan A. Patz et al., *Climate Change: Challenges and Opportunities for Global Health*, 312 JAMA 1565, 1567 (2014).

¹⁹ Ctrs. for Disease Control & Prevention, *Extreme Heat*, NAT'L ENVTL. PUB. HEALTH TRACKING, ephtracking.cdc.gov/showClimateChangeExtremeHeat.action (last updated July 1, 2014); Intergovernmental Panel on Climate Change, *Summary for Policymakers*, in CLIMATE CHANGE 2014: IMPACTS, ADAPTATION, AND VULNERABILITY. PART A: GLOBAL AND SECTORAL ASPECTS. CONTRIBUTION OF WORKING GROUP II TO THE FIFTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 14 (Christopher B. Field et al. eds., IPCC 2014), ipcc-wg2.gov/AR5/images/uploads/WG2AR5_SPM_FINAL.pdf.

²⁰ See PETER ALTMAN, NAT'L RES. DEF. COUNCIL, KILLER SUMMER HEAT: PROJECTED DEATH TOLL FROM RISING TEMPERATURES IN AMERICA DUE TO CLIMATE CHANGE 4–5 tbl.2 (2012), nrdc.org/globalwarming/killer-heat/files/killer-summer-heat-report.pdf (presenting projections for the 40 largest U.S. cities previously published in Scott Greene et al., *An Examination of Climate Change on Extreme Heat Events and Climate-Mortality Relationships in Large U.S. Cities*, 3 WEATHER, CLIMATE, & SOC'Y, 281–92 (2011)).

The implications for corrections of increasing temperatures associated with climate change are not limited to the direct impact of heat on human health. As temperatures rise and the climate changes, food and water supplies will be put at risk. Peak energy use during heat waves will likely cause more frequent brownouts and blackouts. Buildings, paved surfaces, and mechanical systems are all vulnerable to damage from high heat. And these and other impacts will be compounded by other effects of climate change, such as flooding.

This paper offers the first systematic analysis of the correctional sector's structural and legal vulnerabilities to high temperatures caused by climate change. Section 1 presents an overview of the correctional sector. It emphasizes those characteristics that shape the sector's particular vulnerabilities to harm from rising temperatures. Legal dimensions of the problem posed by increased heat are the topic of Section 2. It begins with a discussion of constitutional claims that inmates may bring against correctional departments that fail to protect them from extreme heat. The correctional sector may be alone in facing the prospect of viable constitutional litigation if it does not effectively adapt to the changing climate. After examining constitutional issues, Section 2 turns to other inmate claims and possibilities for legal action by correctional officers. It concludes with a look at existing correctional policies and regulations concerned with heat and climate control. Section 3 is concerned with how corrections can adapt to the rising temperatures of the twenty-first century. It begins with an overview of the basics of adaptation before identifying and discussing exceptional challenges that make adaptation in the correctional sector different. It then turns to options for meeting those challenges, recommending cost-effective strategies and tactics that can make adaptation successful.

There is much that lies beyond the scope of this paper. Impacts of climate change other than heat, such as flooding from sea-level rise and major storms, present substantial challenges for the correctional sector and will have to be included in comprehensive vulnerability assessments and adaptation efforts. Many of the effects of climate change on corrections will equally affect other detention and confinement systems, including juvenile justice and immigration, requiring those systems to undertake adaptation efforts of their own. These and other issues are important topics for further research and analysis.

Adapting correctional systems to the ongoing changes in climate presents an unprecedented challenge. While informed predictions can be made about future objective conditions, much will remain unknown as the decades unfold. As the physical world continues to change, our institutions and systems will change as well. There is no fixed endpoint.²¹ Designing and implementing policy in the face of uncertainty will be difficult and sometimes profoundly uncomfortable. But it will also offer unique opportunities to think beyond maintaining and shoring up vulnerable facilities and systems, to think about how to build a future correctional sector that is not only flexible, resilient, and adapted to climate change, but also more effective and successful at fulfilling its mission than it is at present. These opportunities dovetail with recent efforts to reform corrections, such as shifting spending toward preventing recidivism, that have so far been driven largely by fiscal concerns.

Correctional departments should begin thinking strategically about adaptation, zeroing in on an approach or philosophy to guide them as they select among specific adaptation options. Such strategic thinking should include a recognition that appropriate options for the near term may be unsuitable for the long term. Departments should be wary of taking actions that unnecessarily limit their future options.

2 OVERVIEW OF THE CORRECTIONAL SECTOR

To some extent it is illusory to speak of *the* correctional sector in the United States, simply because it is so diverse. In addition to the federal system, each of the 50 states has its own correctional system for adults who have been convicted of crimes. Most states have separate local jail systems for inmates who are awaiting trial or who are serving brief sentences.²² Some

²¹ While the climate has never been and never will be fixed or static, the twenty-first century promises to be more transitional and the twenty-second may be more stable. Conceptualizing this century as a bridge to the next may make it easier to undertake adaptation planning.

²² In this paper, consistent with typical criminal justice parlance, the word “prison” refers to a correctional facility housing predominantly sentenced inmates serving terms of more than a year, typically for felony convictions. The word “jail” refers to a detention center housing predominantly individuals who have been arrested but not yet tried, who are in transit between court appearances or between facilities, or who are serving sentences of less than a year, typically for misdemeanor violations. *See, e.g.*, LARRY E.

facilities are publicly administered, others are privately run. This section provides only a brief overview of the correctional sector.

2.1 Jurisdictions and Administration

The federal prison system is operated by the Federal Bureau of Prisons (BOP), an agency of the Department of Justice, which is responsible for the custody of all adults convicted of a federal crime.²³ The BOP operates 121 institutions of its own and also houses inmates in contract facilities operated by private corporations.²⁴ There are federal institutions in most of the 50 states as well as the District of Columbia and Puerto Rico.²⁵

All 50 states have their own prison systems, run by correctional departments. Twenty-nine states use privately operated contract prisons as well as state-run institutions.²⁶ All but six states have administratively separate local jail systems as well.²⁷ These diverse systems are run by cities, counties, and other local government entities. A total of 2,859 distinct jail jurisdictions existed as of 2006.²⁸ Numerous Indian nations have their own jails, some operated by tribal authorities, others by the Bureau of Indian Affairs.²⁹

SULLIVAN, ED., THE SAGE GLOSSARY OF THE SOCIAL AND BEHAVIORAL SCIENCES 275 (“jail”), 403–404 (“prison”) (2009).

²³ The US Marshals Service has custody of people charged with federal crimes until they are convicted and transferred to BOP or acquitted and released. The Marshals Service does not operate detention facilities of its own but contracts with states and localities for jail space. *See Defendant & Prisoner Custody & Detention*, U.S. MARSHALS SERV., usmarshals.gov/prisoner/detention.htm (last visited Aug. 1, 2015).

²⁴ *Fed. Prisons*, FED. BUREAU OF PRISONS, bop.gov/about/facilities/federal_prisons.jsp (last visited Aug. 1, 2015); *Contract Prisons*, FED. BUREAU OF PRISONS, bop.gov/about/facilities/contract_facilities.jsp (last visited Aug. 1, 2015).

²⁵ *Map of Our Locations*, FED. BUREAU OF PRISONS, bop.gov/locations/map.jsp (last visited Aug. 1, 2015).

²⁶ At the end of 2013, Alabama, Alaska, Arizona, California, Colorado, Connecticut, Florida, Georgia, Hawai‘i, Idaho, Indiana, Kansas, Louisiana, Maryland, Mississippi, Montana, New Jersey, New Mexico, North Carolina, Ohio, Oklahoma, Pennsylvania, South Carolina, South Dakota, Tennessee, Texas, Vermont, Virginia, and Wyoming had inmates housed in private prisons. *See* BUREAU OF JUSTICE STATISTICS, NCJ 247282, PRISONERS IN 2013, at 14 tbl.12 (2014), bjs.gov/content/pub/pdf/p13.pdf.

²⁷ Alaska, Connecticut, Delaware, Hawai‘i, Rhode Island, and Vermont have integrated prison-jail systems.

²⁸ BUREAU OF JUSTICE STATISTICS, NCJ 230188, CENSUS OF JAIL FACILITIES, 2006, at 3 tbl.1 (2011), bjs.gov/content/pub/pdf/cjf06.pdf.

²⁹ BUREAU OF JUSTICE STATISTICS, NCJ 247017, JAILS IN INDIAN COUNTRY, 2013, at 8 (2014), bjs.gov/content/pub/pdf/jic13.pdf.

2.2 Existing Facilities

The Bureau of Justice Statistics (BJS), part of the US Department of Justice, periodically conducts a Census of State and Federal Adult Correctional Facilities and a separate Census of Jails. Unfortunately, neither has been updated recently. The latest census of Census of State and Federal Adult Correctional Facilities is from 2005 and the most recent Census of Jails is from 2006.³⁰ The BJS Annual Survey of Jails in Indian Country, however, does provide more current information about that small subsection of the corrections world.³¹

2.2.1 Number and Types of Facilities

2.2.1.1 Prisons

As of December 2005, there were 1,719 state and 102 federal correctional facilities of various types in operation, for a total of 1,821.³² This number included private and local facilities operating under contract with federal or state correctional authorities.³³ It included not only prisons but also prison farms; reception, diagnostic, and classification centers; facilities primarily for people returned to custody for reasons such as parole violations; road, forestry, and conservation camps; youthful offender facilities (except in California); vocational training facilities; drug and alcohol treatment facilities; and state-operated local detention facilities in those states that operate combined prison and jail systems.³⁴

³⁰ See *Census of State & Federal Adult Correctional Facilities*, BUREAU OF JUST. STAT., bjs.gov/index.cfm?ty=dcdetail&iid=255 (last visited Aug. 1, 2015); *Census of Jails*, BUREAU OF JUST. STAT., bjs.gov/index.cfm?ty=dcdetail&iid=254 (last visited Aug. 1, 2015).

³¹ See *Jails in Indian Country*, BUREAU OF JUST. STAT., bjs.gov/index.cfm?ty=pbdetail&iid=276 (last visited Aug. 1, 2015).

³² BUREAU OF JUSTICE STATISTICS, NCJ 222182, CENSUS OF STATE AND FEDERAL CORRECTIONAL FACILITIES, 2005, at 2 tbl.1 (2008), bjs.gov/content/pub/pdf/csf05.pdf.

³³ *Id.* at 1 (2008).

³⁴ BUREAU OF JUSTICE STATISTICS, CENSUS OF STATE AND FEDERAL ADULT CORRECTIONAL FACILITIES, 2005: CODEBOOK 5 (Inter-university Consortium for Political and Social Research, n.d.), icpsr.umich.edu/icpsrweb/ICPSR/studies/24642. The census excluded private facilities not primarily for state or federal inmates; military facilities; Immigration and Customs Enforcement facilities; Bureau of Indian Affairs facilities; facilities operated by or for local government; facilities operated by the Marshals Service; hospital wings and wards reserved for state prisoners; and facilities that held only juveniles.

State and federal authorities directly operated 1,406 facilities and private corporations operated another 415.³⁵ Private facilities were generally small: 346 of the 415 private facilities had average daily populations of fewer than 500 inmates and only 2 had average daily populations of more than 2,500.³⁶ More than 80 percent of private facilities operating under federal contract had an average daily population of fewer than 100 inmates.³⁷

More than half of all facilities were minimum-security, just over a quarter were medium-security, and a fifth were maximum security.³⁸ Minimum-security facilities tended to be much smaller than the others, holding an average of 319 inmates, compared to 1,261 for medium-security and 1,379 for maximum-security.³⁹

2.2.1.2 Jails

There were 3,283 jail facilities in operation at the end of 2006, 94 fewer than in 1999.⁴⁰ All but 49 were run by local authorities; private or public entities under contract to local governments operated 37 facilities and the BOP operated another 12.⁴¹

Jails tended to be small. Jail jurisdictions holding fewer than 50 inmates accounted for almost 40 percent of all jurisdictions and those holding fewer than 100 made up fully 59 percent.⁴² A number of jurisdictions had recently consolidated small neighboring local jails into larger regional jails. There were at least 63 regional jails in 17 states in 2006, up from 42 regional jails in 14 states in 1999.⁴³ Two large jail jurisdictions, one in New York, the other in California, held at least 10,000 inmates apiece.⁴⁴ Even though most jurisdictions had small inmate populations, the limited number of large jurisdictions housed the majority of inmates.

³⁵ BUREAU OF JUSTICE STATISTICS, NCJ 222182, CENSUS OF STATE AND FEDERAL CORRECTIONAL FACILITIES, 2005, at 2 tbl.1 (2008), bjs.gov/content/pub/pdf/csfcf05.pdf.

³⁶ *Id.* at app. tbl.3.

³⁷ *Id.* at 4.

³⁸ *Id.* at 3.

³⁹ *See id.* at 19 app. tbl.11.

⁴⁰ BUREAU OF JUSTICE STATISTICS, NCJ 230188, CENSUS OF JAIL FACILITIES, 2006, at 1, 4 (2011), bjs.gov/content/pub/pdf/cjf06.pdf. The census counted 2,860 individual jail jurisdictions. *Id.* at 1.

⁴¹ *See id.* at 2, 3 tbl.1.

⁴² *See id.* at 14.

⁴³ *Id.* at 4.

⁴⁴ *See id.* at 14.

Jail jurisdictions with populations of 1,000 or more made up only 5 percent of all jurisdictions but held half the nation's jail population.⁴⁵

The 2013 Annual Survey of Jails in Indian Country identified 79 such facilities, fully 21 of which had been built in the nine-year period from 2004 to 2013.⁴⁶ Jails in Indian country held an average of 29 inmates but the 18 facilities with a capacity of more than 50 inmates held just over half of all inmates.⁴⁷

2.2.2 Overcrowding and Facilities Under Court Orders or Consent Decrees

Because human beings are sources of heat and humidity, the number of people in a given enclosed space has a direct impact on the thermal conditions in that space.⁴⁸ Therefore, overcrowding of correctional facilities is an impediment to maintaining a tolerable interior environment. As external temperatures rise, overcrowding will become a bigger problem.

The 2005 Census of State and Federal Correctional Facilities found that a total of 44 facilities (21 public, 23 private, all of them state facilities) were under court order or consent decree to limit inmate populations.⁴⁹ The 2006 Census of Jails revealed widespread overcrowding as well, as evidenced by the finding that 204 jail jurisdictions were under court orders or consent decrees to limit their inmate populations.⁵⁰

⁴⁵ See *id.* at 18.

⁴⁶ BUREAU OF JUSTICE STATISTICS, NCJ 247017, JAILS IN INDIAN COUNTRY, 2013, at 1 (2014), bjs.gov/content/pub/pdf/jic13.pdf.

⁴⁷ *Id.* at 1, 3 tbl.3.

⁴⁸ See, e.g., 1997 ASHRAE FUNDAMENTALS HANDBOOK 28.7 (1997) (noting that “heat and moisture . . . given off by human beings” often “constitute a large fraction of the total [cooling] load” of an air-conditioning system); CORKY BINGGELI, BUILDING SYSTEMS FOR INTERIOR DESIGNERS 22 (2009) (quantifying heat production of human body, ranging from 70 to 870 watts, depending on activity level).

⁴⁹ BUREAU OF JUSTICE STATISTICS, NCJ 222182, CENSUS OF STATE AND FEDERAL CORRECTIONAL FACILITIES, 2005, at app. tbl.6 (2008), bjs.gov/content/pub/pdf/csfcf05.pdf. The census also found that 218 facilities (189 state, 1 federal, and 28 private) were under court orders or consent decrees because of specific conditions of confinement. *Id.* Some facilities were under court orders or consent decrees both to limit population and for specific conditions of confinement. See *id.*

⁵⁰ BUREAU OF JUSTICE STATISTICS, NCJ 230188, CENSUS OF JAILS, 2006, at 13 tbl.7 (2011), bjs.gov/content/pub/pdf/cjf06.pdf. The census also found that 165 state jail jurisdictions were under court orders or consent decrees for specific conditions of confinement. *Id.* Most jail jurisdictions under court orders or consent decrees for specific conditions were also under court orders or consent decrees to limit populations. See *id.*

Overcrowding in California prisons, once the worst in the nation, reached a high of 199 percent of design capacity in 2007.⁵¹ The state is under court orders to reduce overcrowding to 137.5 percent of design capacity by February 2016.⁵² At the end of 2013, as a result of a variety of measures, including housing prisoners in local jails and modifying sentencing laws, overcrowding stood at 142.7 percent of design capacity.⁵³

At the end of 2013, the inmate populations in at least 18 states, as well as in the federal system, exceeded the capacity of their prison facilities.⁵⁴ Federal prisons were at 133.1 percent of their rated capacity.⁵⁵ The states with the most overcrowded prisons were Illinois, at 151.7 percent, North Dakota at 150.5 percent, and California at 142.7 percent.⁵⁶ The states with the least crowding were New Mexico (50.9 percent), Mississippi (60.7 percent), and Tennessee (70.3 percent).⁵⁷

In considering data on overcrowding, it is important to bear in mind that the rated capacity of a facility is often greater (but rarely less) than its original design capacity.⁵⁸ Thus, the total rated capacity of all state facilities counted in the 2005 Census of State and Federal Correctional Facilities was 1,182,784 but their design capacity was 963,404.⁵⁹ This increase from design capacity to rated capacity of more than 200,000 inmates partly reflects renovations and other

⁵¹ BUREAU OF JUSTICE STATISTICS, NCJ 247282, PRISONERS IN 2013, at 12 (2014), bjs.gov/content/pub/pdf/p13.pdf.

⁵² *Id.*

⁵³ *Id.*

⁵⁴ *See id.* at 31 app. tbl.1. States reported facilities' "rated capacity," "operational capacity," "design capacity," or some combination of these measures. Where a state reported more than one measure, the Bureau of Justice Statistics compared the jurisdiction's custody population with the lowest and highest measures reported. The custody population exceeded the *highest* reported capacity in 18 states and exceeded the *lowest* reported capacity in 27 states. *See id.*

⁵⁵ *Id.*

⁵⁶ *See id.* Illinois prisons were at 151.7 percent of rated or operational capacity and at 172.6 percent of design capacity. North Dakota prisons were at 150.5 percent of rated or design capacity and at 158.5 percent of operational capacity. California's prisons were at 142.7 percent of design capacity. *See id.*

⁵⁷ *See id.*

⁵⁸ A facility's "rated capacity" is the number of beds or inmates assigned to it by a rating official. Its "design capacity" is number of inmates originally intended by the planners or architects who designed it. *See Terms & Definitions: Corrections*, BUREAU OF JUSTICE STATISTICS, bjs.gov/index.cfm?ty=tdtp&tid=1 (last revised Sept. 15, 2014).

⁵⁹ BUREAU OF JUSTICE STATISTICS, NCJ 222182, CENSUS OF STATE AND FEDERAL CORRECTIONAL FACILITIES, 2005, at app. tbl.4 (2008), bjs.gov/content/pub/pdf/csfcf05.pdf.

physical changes to facilities. But it also reflects “double bunking” to increase capacity by housing two inmates in spaces originally designed for one. For example, the Bureau of Prisons originally calculated the rated capacity of its facilities based on the assumption that cells would have single occupants and dormitory spaces would have single beds, with double bunking used only on a temporary basis when necessary.⁶⁰ In the late twentieth century, however, the BOP recalculated the rated capacity of its existing facilities, now assuming double bunking in 100 percent of minimum- and low-security facilities, 50 percent of medium security facilities, and 25 percent of high-security facilities.⁶¹

2.2.3 Age of Facilities

Sixty-nine of the facilities identified in the 2005 Census of State and Federal Correctional Facilities were built in the nineteenth century, with the oldest, the Metropolitan Transition Center in Baltimore, dating from 1811.⁶² In August 2006, high temperatures killed one inmate and contributed to the death of another at the Indiana State Prison, which was built in 1860 and lacks air conditioning.⁶³ The oldest jail identified in the 2006 Census of Jails was the Bayou Dorcheat Correction Center in Minden, Louisiana, built in 1800, one of 34 from before the twentieth century.⁶⁴ A total of 307 prison facilities and 153 jails constructed before the end of the

⁶⁰ See Scott Higgins, *Responding to a Fourfold Increase in Population: The Experience of the Federal Bureau of Prisons*, in PRISON ARCHITECTURE: POLICY, DESIGN AND EXPERIENCE 85, 86–87 (Leslie Fairweather & Seán McConville eds., 2000).

⁶¹ See *id.* at 85, 87. Unfortunately, the Bureau of Prisons did not report data on the design capacity of its facilities to the Bureau of Justice Statistics for at least the last two censuses of correctional facilities. See BUREAU OF JUSTICE STATISTICS, NCJ 222182, CENSUS OF STATE AND FEDERAL CORRECTIONAL FACILITIES, 2005, at app. tbl.4 note a (2008), bjs.gov/content/pub/pdf/csfcf05.pdf.

⁶² See BUREAU OF JUSTICE STATISTICS, ICPSR 24642, CENSUS OF STATE AND FEDERAL ADULT CORRECTIONAL FACILITIES, DATASET DS1, available at icpsr.umich.edu/icpsrweb/NACJD/studies/24642.

⁶³ See *Coroner: Heat Contributed to 2 State Prison Inmates' Deaths*, S. BEND TRIB. (Ind.) (Aug. 3, 2006), articles.southbendtribune.com/2006-08-03/news/26957886_1_maximum-security-prison-prison-officials-cooling-centers; Cheryl Jackson, *Intense Heat Affects Inmates at Prison*, S. BEND TRIB. (Ind.) (Aug. 2, 2006), articles.southbendtribune.com/2006-08-02/news/26943153_1_prison-deaths-prison-employees-indiana-state-prison; Jon Seidel, *Heat Contributes to Inmates' Deaths*, MERRILLVILLE POST-TRIB. (Ind.), Aug. 3, 2006, at A1, highbeam.com/doc/1N1-113B189B9C6C7D40.html.

⁶⁴ See BUREAU OF JUSTICE STATISTICS, ICPSR 26602, CENSUS OF JAIL FACILITIES, DATASET DS1, available at icpsr.umich.edu/icpsrweb/NACJD/studies/26602.

Second World War were still in use in 2005 and 2006, respectively.⁶⁵ The majority of both prisons and jails, however, were built since 1980.⁶⁶

2.2.4 Building Materials and Technologies

Historically, prisons were built to last, using stone, brick, cement, and other heavy, durable building materials.⁶⁷ As facilities aged, they were often simply added to in haphazard fashion, sometimes creating a sort of three-dimensional collage of building materials and construction techniques.⁶⁸ For most of the twentieth century, prison architecture tended toward monolithic, high-capacity, high-security buildings.⁶⁹ Prison exteriors were typically “large expanses of hard material,” with windows “small and few.”⁷⁰

The explosive growth in the US prison population in the last quarter of the twentieth century led to changes in prison construction techniques and materials. Less costly materials and less time-consuming techniques began to be used, and both the Bureau of Prisons and several states looked toward standardizing building plans.⁷¹ At the same time, the difficulties in managing inmates in massive housing tiers led to construction of low- and medium-security

⁶⁵ See BUREAU OF JUSTICE STATISTICS, ICPSR 24642, CENSUS OF STATE AND FEDERAL ADULT CORRECTIONAL FACILITIES, DATASET DS1, *available at* icpsr.umich.edu/icpsrweb/NACJD/studies/24642; BUREAU OF JUSTICE STATISTICS, ICPSR 26602, CENSUS OF JAIL FACILITIES, DATASET DS1, *available at* icpsr.umich.edu/icpsrweb/NACJD/studies/26602.

⁶⁶ See BUREAU OF JUSTICE STATISTICS, ICPSR 24642, CENSUS OF STATE AND FEDERAL ADULT CORRECTIONAL FACILITIES, DATASET DS1, *available at* icpsr.umich.edu/icpsrweb/NACJD/studies/24642; BUREAU OF JUSTICE STATISTICS, ICPSR 26602, CENSUS OF JAIL FACILITIES, DATASET DS1, *available at* icpsr.umich.edu/icpsrweb/NACJD/studies/26602. Note that both censuses were missing data on when many facilities were built.

⁶⁷ See TODD S. PHILLIPS & MICHAEL A. GRIEBEL, BUILDING TYPE BASICS FOR JUSTICE FACILITIES 4, 141 (2003); Joseph Torey Nalbone, Evaluation of Building and Occupant Response to Temperature and Humidity: Non-Traditional Heat Stress Considerations: A Comparison of Different Construction Types Used by the Texas Department of Criminal Justice 5 (Dec. 2004) (unpublished Ph.D. dissertation, Texas A&M Univ.), *available at* oaktrust.library.tamu.edu/handle/1969.1/1504.

⁶⁸ See, e.g., TODD S. PHILLIPS & MICHAEL A. GRIEBEL, BUILDING TYPE BASICS FOR JUSTICE FACILITIES 4 (2003) (describing much prison construction as “additive and sometimes at hoc”).

⁶⁹ See generally NORMAN JOHNSTON, FORMS OF CONSTRAINT: A HISTORY OF PRISON ARCHITECTURE 140–49 (2000) (describing dominant architectural models).

⁷⁰ TODD S. PHILLIPS & MICHAEL A. GRIEBEL, BUILDING TYPE BASICS FOR JUSTICE FACILITIES 141 (2003).

⁷¹ See NORMAN JOHNSTON, FORMS OF CONSTRAINT: A HISTORY OF PRISON ARCHITECTURE 152–54 (2000); Joseph Torey Nalbone, Evaluation of Building and Occupant Response to Temperature and Humidity: Non-Traditional Heat Stress Considerations: A Comparison of Different Construction Types Used by the Texas Department of Criminal Justice 5 (Dec. 2004) (unpublished Ph.D. dissertation, Texas A&M Univ.), *available at* oaktrust.library.tamu.edu/handle/1969.1/1504.

facilities based on a campus model of multiple lower-capacity units or pods.⁷² On the other hand, this era also saw the birth of “supermax” control-unit prisons, which more resemble the traditional fortress-style facility.⁷³

2.2.5 Expenditures on Construction and Maintenance

Between 1982 and 1991, as correctional departments expanded their systems to keep up with the swelling inmate population, state institutional capital outlays—money spent on construction, renovation, and repair of institutions, on various real-estate expenses, and on purchasing durable equipment—accounted for between 8.5 and 13.6 percent of annual corrections expenditures.⁷⁴ In any given year during that time frame, at least six states found themselves putting 20 percent or more of their corrections dollars toward capital outlays.⁷⁵ Annual spending on capital outlays peaked in 1991, coming in at \$4.6 billion.⁷⁶

After that peak, annual capital outlays began to fall, eventually reaching \$2.3 billion or less for each year between 2002 and 2010.⁷⁷ In only one year during that period did more than a single state allocate 20 percent or more of its corrections expenditures to capital outlay.⁷⁸

Construction expenses for the correctional sector can vary considerably from year to year, particularly on the local level. With that caveat, some figures from fiscal year 2011 are still instructive. During fiscal 2011, state governments together spent roughly \$1.25 billion on construction of correctional institutions.⁷⁹ All but 12 states—Delaware, Hawai‘i, Kentucky, Maine, Mississippi, New Mexico, South Dakota, Tennessee, Utah, Vermont, Virginia, and Wyoming—spent more than \$1 million each on correctional construction.⁸⁰ A number of large

⁷² See NORMAN JOHNSTON, FORMS OF CONSTRAINT: A HISTORY OF PRISON ARCHITECTURE 153–54 (2000).

⁷³ See *id.* at 148, 157–58.

⁷⁴ See BUREAU OF JUSTICE STATISTICS, NCJ 239672, STATE CORRECTIONS EXPENDITURES, FY 1982–2010, at 2 (rev. 2014), bjs.gov/content/pub/pdf/scefy8210.pdf.

⁷⁵ See *id.* at 3 tbl.1.

⁷⁶ See *id.* at 2.

⁷⁷ See *id.*

⁷⁸ See *id.* at 3 tbl.1.

⁷⁹ See BUREAU OF JUSTICE STATISTICS, NCJ 247020, JUSTICE EXPENDITURE AND EMPLOYMENT EXTRACTS, 2011: PRELIMINARY, file jeeus1110.csv (2014), available at bjs.gov/index.cfm?ty=pbdetail&iid=5050 (click on “Comma-delimited format (CSV)” to download data archive, then unzip downloaded archive “jeeus11p.zip,” then open file “jeeus1110.csv”).

⁸⁰ See *id.*

counties, including Bergen, NJ, Bexar, TX, Broward, FL, Cook, IL, Dade, FL, Hillsborough, FL, Hudson, NJ, Los Angeles, CA, Maricopa, AZ, Milwaukee, WI, Montgomery, PA, Nassau, NY, Orange, CA, Orange, FL, Suffolk, NY, Travis, TX, and Wayne, MI, each shouldered construction expenses in excess of \$1 million for correctional facilities.⁸¹ And several large cities, including New Orleans, New York, Philadelphia, and Washington, each spent over \$1 million on correctional construction.⁸²

2.3 Inmate Populations

The total incarcerated population hit an all-time high in 2008 and has been gradually declining since then.⁸³ At the end of 2013, approximately 2,220,300 individuals were in state or federal prisons or local jails, compared to approximately 2,307,500 at the end of 2008.⁸⁴ These numbers do not include the tens of thousands of juveniles in the custody of the juvenile-justice system or the hundreds of thousands of immigrants who spend time in US Immigration and Customs Enforcement facilities each year pending deportation.⁸⁵ Despite the first decrease in the number of federal prisoners since 1980 (down by 1,900), the total prison population grew

⁸¹ See BUREAU OF JUSTICE STATISTICS, NCJ 247020, JUSTICE EXPENDITURE AND EMPLOYMENT EXTRACTS, 2011: PRELIMINARY, file jeeus1112.csv (2014), available at bjs.gov/index.cfm?ty=pbdetail&iid=5050 (click on “Comma-delimited format (CSV)” to download data archive, then unzip downloaded archive “jeeus11p.zip,” then open file “jeeus1112.csv”).

⁸² See BUREAU OF JUSTICE STATISTICS, NCJ 247020, JUSTICE EXPENDITURE AND EMPLOYMENT EXTRACTS, 2011: PRELIMINARY, file jeeus1115.csv (2014), available at bjs.gov/index.cfm?ty=pbdetail&iid=5050 (click on “Comma-delimited format (CSV)” to download data archive, then unzip downloaded archive “jeeus11p.zip,” then open file “jeeus1115.csv”).

⁸³ See BUREAU OF JUSTICE STATISTICS, NCJ 248479, CORRECTIONAL POPULATIONS IN THE UNITED STATES, 2013, at 13 tbl.5 (2014), bjs.gov/content/pub/pdf/cpus13.pdf. The total incarcerated population decreased by 0.5 percent in 2013, the second consecutive year with a decrease of less than 1 percent. *Id.* at 1.

⁸⁴ Compare *id.* at 2 tbl.1 with BUREAU OF JUSTICE STATISTICS, NCJ 239972, CORRECTIONAL POPULATIONS IN THE UNITED STATES, 2011, at 3 tbl.2 (2012), bjs.gov/content/pub/pdf/cpus11.pdf. For a useful interactive map showing the most recent available data on prison and jail populations and incarceration rates for each of the 50 states, and allowing comparison between states, see *Interactive Map*, SENTENCING PROJECT, sentencingproject.org/map/map.cfm (last visited Aug. 1, 2015).

⁸⁵ Some 68,815 juveniles age 21 or younger were being held state juvenile facilities in late 2011, down from 109,094 in 2003. OFFICE OF JUVENILE JUSTICE & DELINQUENCY PREVENTION, NCJ 246826, JUVENILES IN RESIDENTIAL PLACEMENT, 2011, at 3 (2014), ojjdp.gov/pubs/246826.pdf. During 2013, the Department of Homeland Security apprehended approximately 662,000 aliens and Immigration and Customs Enforcement detained nearly 441,000 aliens. OFFICE OF IMMIGRATION STATISTICS, IMMIGRATION ENFORCEMENT ACTIONS: 2013, at 1 (2014), dhs.gov/sites/default/files/publications/ois_enforcement_ar_2013.pdf.

slightly in 2013 (up by 4,300), putting an end to a three-year downward trend.⁸⁶ However, that increase was outweighed by a modest decrease in the local jail population (down by 13,300).⁸⁷ Of the incarcerated population at the end of 2013, about 70 percent (1,574,700) was in prison and 30 percent (731,200) was in jail.⁸⁸

2.3.1 Location and Jurisdiction

The prison population at the end of 2013 was split between 215,866 in federal custody and 1,358,875 in state custody.⁸⁹ Private prisons held 137,200 prison inmates, making up 8 percent of all state prisoners and 19 percent of all federal prisoners.⁹⁰ Although the total number of prisoners held in private facilities fell by 3 percent during 2013, the federal government and some states continued to make heavy use of private prisons.⁹¹ New Mexico housed 44 percent of its inmates in private facilities, Montana 40 percent, Idaho 36 percent, and Oklahoma 26 percent.⁹²

Most prisoners were held in state and federal prisons but some were housed elsewhere, most notably in local jails. At the end of 2013, local jails held about 85,600 prisoners on top of their regular jail populations.⁹³ Some states placed unusual reliance on local jails. Louisiana housed fully 52 percent of its prison inmates in local jails, Kentucky 39 percent, and Mississippi 29 percent.⁹⁴ California made use of local jails to help alleviate the chronic overcrowding of its

⁸⁶ See BUREAU OF JUSTICE STATISTICS, NCJ 248479, CORRECTIONAL POPULATIONS IN THE UNITED STATES, 2013, at 2 tbl.1, 3 (2014), bjs.gov/content/pub/pdf/cpus13.pdf.

⁸⁷ See *id.* at 2 tbl.1.

⁸⁸ *Id.* at 2.

⁸⁹ BUREAU OF JUSTICE STATISTICS, NCJ 247282, PRISONERS IN 2013, at 2 tbl.1 (2014), bjs.gov/content/pub/pdf/p13.pdf.

⁹⁰ *Id.* at 13.

⁹¹ *Id.*

⁹² *Id.*

⁹³ *Id.*

⁹⁴ *Id.* at 2.

state prisons.⁹⁵ Territorial prisons housed around 14,000 inmates at the end of 2013 and 1,421 were held in military facilities.⁹⁶ Jails in Indian country held another 2,287 in mid-2013.⁹⁷

2.3.2 Reasons for Incarceration

State and federal inmates differ significantly in terms of the offenses for which they are serving time. In 2012, as Table 1 shows, the most common offenses for which state prisoners were imprisoned were violent offenses and property offenses.⁹⁸ In contrast, the most common offenses for federal prisoners were drug offenses and public-order offenses.⁹⁹

Table 1. Sentenced prisoners by jurisdiction and offense, 2012, estimates		
Most serious offense	State	Federal
Violent	53.8%	7.1%
Property	18.8%	5.8%
Drug	16.0%	51.0%
Public order	10.7%	35.5%
Other/unspecified	0.8%	0.6%
Source: BUREAU OF JUSTICE STATISTICS, NCJ 247282, PRISONERS IN 2013, at 15 tbl.13, 17 tbl.16 (2014), bjs.gov/content/pub/pdf/p13.pdf .		

2.3.3 Prevalence of Risk Factors for Heat-Related Illness Among Inmates

Certain conditions can increase an individual's susceptibility to suffering adverse health effects from heat, including age, mental and physical health, and the use of medications.¹⁰⁰

⁹⁵ See *id.* at 11.

⁹⁶ BUREAU OF JUSTICE STATISTICS, NCJ 248479, CORRECTIONAL POPULATIONS IN THE UNITED STATES, 2013, at 13 app. tbl.3 (2014), [bjs.gov/content/pub/pdf/cpus13.pdf](https://www.bjs.gov/content/pub/pdf/cpus13.pdf); BUREAU OF JUSTICE STATISTICS, NCJ 247282, PRISONERS IN 2013, at 21 (2014), [bjs.gov/content/pub/pdf/p13.pdf](https://www.bjs.gov/content/pub/pdf/p13.pdf).

⁹⁷ BUREAU OF JUSTICE STATISTICS, NCJ 247017, JAILS IN INDIAN COUNTRY, 2013, at 1 (2014), [bjs.gov/content/pub/pdf/jic13.pdf](https://www.bjs.gov/content/pub/pdf/jic13.pdf).

⁹⁸ BUREAU OF JUSTICE STATISTICS, NCJ 247282, PRISONERS IN 2013, at 15 tbl.13 (2014), [bjs.gov/content/pub/pdf/p13.pdf](https://www.bjs.gov/content/pub/pdf/p13.pdf). Data are for December 31, 2012.

⁹⁹ *Id.* at 17 tbl.16. Data are for September 30, 2012. The category of public-order offenses "includes weapons, drunk driving, and court offenses; commercialized vice, morals, and decency offenses; and liquor law violations and other public-order offenses." *Id.* at 15 tbl.13 note e.

¹⁰⁰ For an overview of mortality and morbidity associated with extreme heat events among the general population in the US, see, e.g., ENVTL. PROT. AGENCY, EPA 430-B-06-005, EXCESSIVE HEAT EVENTS GUIDEBOOK 12–16 (2006), [epa.gov/heatisland/about/pdf/EHEguide_final.pdf](https://www.epa.gov/heatisland/about/pdf/EHEguide_final.pdf).

2.3.3.1 Age

The inmate population is aging.¹⁰¹ Between 1999 and 2013, the number of state and federal prisoners age 55 and older increased by 234 percent, a much faster rate of growth than among younger inmates.¹⁰² At the end 2013, 9.5 percent of sentenced prisoners were age 55 or older, including 2.1 percent who were age 65 or older.¹⁰³ In recent years nearly half a million of those arrested annually have been age 50 or older.¹⁰⁴

This unprecedented growth in the senior inmate population reflects a number of phenomena, including the graying of the US population as a whole. But the decisive shift in criminal-justice policies toward punishment and retribution instead of treatment and rehabilitation, which began in earnest in the early 1980s, bears much of the responsibility.¹⁰⁵ Tough sentencing rules such as mandatory minimums for repeat offenders, sharp reductions in opportunities for discretionary early release, the outright elimination of parole in more than a dozen states, and even the creation of pardon-proof sentences have had the inevitable effect of keeping many offenders in custody well into old age.¹⁰⁶

From a health perspective, inmates appear to experience accelerated aging compared to members of the general population.¹⁰⁷ From the age of 50 onward, incarcerated people are significantly more likely to suffer from chronic health problems or disabilities compared to

¹⁰¹ Including those on parole or probation, the total population of people in custody or under supervision of the criminal justice system is aging more rapidly than the US population as a whole. Brie A. Williams et al., *Addressing the Aging Crisis in U.S. Criminal Justice Health Care*, 60 J. AM. GERIATRICS SOC. 1150, 1150 (2012), [ncbi.nlm.nih.gov/pubmed/23374923/pdf/nihms363409.pdf](https://pubmed.ncbi.nlm.nih.gov/23374923/).

¹⁰² See *Prison Population Continues to Age*, PEW CHARITABLE TRUSTS (Oct. 3, 2014), [pewtrusts.org/en/about/news-room/news/2014/10/03/prison-population-continues-to-age](https://www.pewtrusts.org/en/about/news-room/news/2014/10/03/prison-population-continues-to-age) (citing Bureau of Justice Statistics data). See also RON H. ADAY, *AGING PRISONERS: CRISIS IN AMERICAN CORRECTIONS* 3 (2003) (noting that the elderly are now the fastest-growing age group of prisoners).

¹⁰³ See BUREAU OF JUSTICE STATISTICS, NCJ 247282, *PRISONERS IN 2013*, at 8 tbl.7 (2014), [bjs.gov/content/pub/pdf/p13.pdf](https://www.bjs.gov/content/pub/pdf/p13.pdf).

¹⁰⁴ RON H. ADAY, *AGING PRISONERS: CRISIS IN AMERICAN CORRECTIONS* 2–3 (2003).

¹⁰⁵ See, e.g., *id.* at 7, 10–11.

¹⁰⁶ See, e.g., *id.* at 10–11.

¹⁰⁷ See, e.g., Brie A. Williams, *Addressing the Aging Crisis in U.S. Criminal Justice Health Care*, 60 J. AM. GERIATRICS SOC. 1150, 1151 (2012), [ncbi.nlm.nih.gov/pubmed/23374923/pdf/nihms363409.pdf](https://pubmed.ncbi.nlm.nih.gov/23374923/) (noting that at least 20 state departments of correction and the National Commission on Correctional Health Care consider inmates over 50 or over 55 to be “older”).

those in the outside world.¹⁰⁸ Prisoners over 55 suffer from an average of three chronic health conditions, such as hypertension, diabetes, and pulmonary disease, and around one out of five have a mental illness.¹⁰⁹

With age also comes increased susceptibility to heat-related illness.¹¹⁰ After around age 65, the natural decline of the central nervous system over time compromises the body's ability to regulate temperature, increasing the risk of illness or death from extreme heat.¹¹¹ Elderly individuals who develop full-blown heatstroke have only around a 20 percent chance of survival.¹¹² Inmates may suffer the inevitable decrease in ability to regulate internal body temperature earlier than those in the general population.¹¹³ Older inmates are also at greater risk of heat-related illness than their younger fellows because they take more medication, suffer from more chronic health problems, and are much more likely to be overweight or obese.¹¹⁴

Cognitive impairment afflicts a large portion of older inmates at a far greater rate than outside the world of corrections. Risk factors for cognitive impairment are common among prisoners, including a history of substance abuse, traumatic head injury, and post-traumatic stress disorder.¹¹⁵ According to one study, two out of every five inmates aged 55 or older had a

¹⁰⁸ *Id.* at 1150.

¹⁰⁹ *See id.* at 1151; Mike Mitka, *Aging Prisoners Stressing Health Care System*, 292 JAMA 423, 424 (2004); RON H. ADAY, *AGING PRISONERS: CRISIS IN AMERICAN CORRECTIONS* 92–94 (2003).

¹¹⁰ *See, e.g.*, Barbara K. Bailes & Kathleen Reeve, *Prevention of Heat-Related Illness*, J. FOR NURSE PRAC., Mar. 2007, at 161, 163–64.

¹¹¹ *See, e.g.*, *Heatstroke Risk Factors*, MAYO CLINIC (July 12, 2014), mayoclinic.org/diseases-conditions/heat-stroke/basics/risk-factors/con-20032814.

¹¹² *See* Barbara K. Bailes & Kathleen Reeve, *Prevention of Heat-Related Illness*, J. FOR NURSE PRAC., Mar. 2007, at 161, 164.

¹¹³ *See Prison Population Continues to Age*, PEW CHARITABLE TRUSTS (Oct. 3, 2014), pewtrusts.org/en/about/news-room/news/2014/10/03/prison-population-continues-to-age (citing TINA CHIU, *IT'S ABOUT TIME: AGING PRISONERS, INCREASING COSTS, AND GERIATRIC RELEASE* (Apr. 2010), vera.org/sites/default/files/resources/downloads/Its-about-time-aging-prisoners-increasing-costs-and-geriatric-release.pdf).

¹¹⁴ *See, e.g.*, Barbara K. Bailes & Kathleen Reeve, *Prevention of Heat-Related Illness*, J. FOR NURSE PRAC., Mar. 2007, at 161, 163; BUREAU OF JUSTICE STATISTICS, NCJ 248491, *MEDICAL PROBLEMS OF STATE AND FEDERAL PRISONERS AND JAIL INMATES, 2011–12*, at 17 app. tbl.2–3 (2015), bjs.gov/content/pub/pdf/mpsfpi1112.pdf (reporting incidence of excess weight).

¹¹⁵ *See* Brie A. Williams et al., *Addressing the Aging Crisis in U.S. Criminal Justice Health Care*, 60 J. AM. GERIATRICS SOC. 1150, 1153 (2012), ncbi.nlm.nih.gov/pmc/articles/PMC3374923/pdf/nihms363409.pdf.

diagnosis of cognitive impairment in their medical records.¹¹⁶ The actual incidence could well be much higher, since the study only captured *diagnosed* cognitive impairment.

People with cognitive impairment often exercise poor judgment. Older inmates whose cognition is impaired may be less capable of caring for themselves in conditions of extreme heat by, for example, increasing their fluid intake. This is particularly true because older adults are less able to rely on subjective feelings of thirst to remain properly hydrated.¹¹⁷ They are also less aware of changes in skin temperature and may be less capable of recognizing when heat is causing their health to deteriorate.¹¹⁸

Needless to say, as the prison population ages, the cost of inmate health care increases. This impact on corrections has already reached crisis proportions.¹¹⁹ The National Institute of Corrections estimates the cost of caring for inmates age 55 and older with chronic or terminal illnesses to be two or three times the cost of caring for other inmates.¹²⁰ Other research suggests that the costs are higher still.¹²¹ The larger the share of a state's incarcerated population that inmates age 55 or older make up, the higher the state's per-capita spending on inmate health

¹¹⁶ See *id.*

¹¹⁷ See Gary W. Mack et al., *Body Fluid Balance in Dehydrated Healthy Older Men: Thirst and Renal Osmoregulation*, 76 J. APPLIED PHYSIOLOGY 1615, 1621 (1994) (finding that “an attenuated thirst sensation in dehydrated 65+ subjects is translated directly into reduced fluid intake”).

¹¹⁸ See John Sanko, *Thermoregulation: Considerations for Aging People*, in GERIATRIC REHABILITATION MANUAL 53, 55 (Timothy L. Kauffman et al. eds., 2d ed. 2007); Brie A. Williams et al., *Addressing the Aging Crisis in U.S. Criminal Justice Health Care*, 60 J. AM. GERIATRICS SOC. 1150, 1154 (2012), [ncbi.nlm.nih.gov/pmc/articles/PMC3374923/pdf/nihms363409.pdf](https://pubmed.ncbi.nlm.nih.gov/pmc/articles/PMC3374923/pdf/nihms363409.pdf) (noting need for further research into prevalence and implications of dementia among older prisoners).

¹¹⁹ See, e.g., *id.* at 1150 (“Criminal justice institutes, policy-makers, and the media increasingly view the growing older prisoner population as a health and economic crisis for the criminal justice system and communities . . .”).

¹²⁰ See *Prison Population Continues to Age*, PEW CHARITABLE TRUSTS (Oct. 3, 2014), pewtrusts.org/en/about/news-room/news/2014/10/03/prison-population-continues-to-age (citing B. JAYE ANNO ET AL., CORRECTIONAL HEALTH CARE: ADDRESSING THE NEEDS OF ELDERLY, CHRONICALLY ILL, AND TERMINALLY ILL INMATES (Feb. 2004), static.nicic.gov/Library/018735.pdf).

¹²¹ See, e.g., Brie A. Williams et al., *Addressing the Aging Crisis in U.S. Criminal Justice Health Care*, 60 J. AM. GERIATRICS SOC. 1150, 1151 (2012), [ncbi.nlm.nih.gov/pmc/articles/PMC3374923/pdf/nihms363409.pdf](https://pubmed.ncbi.nlm.nih.gov/pmc/articles/PMC3374923/pdf/nihms363409.pdf); *Prison Population Continues to Age*, PEW CHARITABLE TRUSTS (Oct. 3, 2014), pewtrusts.org/en/about/news-room/news/2014/10/03/prison-population-continues-to-age (citing Cyrus Ahalt et al., *Paying the Price: The Pressing Need for Quality, Cost, and Outcomes Data to Improve Correctional Health Care for Older Prisoners*, 61 J. AM. GERIATRICS SOC. 2013–19 (2013)).

tends to be.¹²² Between 2001 and 2008, at least five states—Alabama, Arkansas, Maryland, Montana, and New Hampshire—saw per-capita spending on inmate health more than double.¹²³

2.3.3.2 Mental Health

Mental illness is significantly more common behind bars than in the population outside.¹²⁴ In 2010, a third of all inmates suffered from mental illness, nearly two-thirds met the criteria for an alcohol- or drug-use disorder, and a quarter had to contend with both mental illness and a substance-abuse disorder.¹²⁵

The prevalence of mental illness among inmates increases their vulnerability to adverse health consequences from extreme heat for at least two reasons. First, many medications used to treat mental illness compromise the body's ability to regulate its internal temperature. Second, like aging inmates with cognitive impairment, mentally ill inmates can be less able to think and act rationally to take care of themselves when the mercury rises and less aware that they are suffering the effects of hyperthermia.¹²⁶

2.3.3.3 Physical Health

Chronic health conditions, including heart, lung, kidney, and liver disease, poor circulation, hypertension, obesity, diabetes, psychiatric and neurological impairment, cancer, and a history

¹²² See PEW CHARITABLE TRUSTS & JOHN D. & CATHERINE T. MACARTHUR FOUND., STATE PRISON HEALTH CARE SPENDING 1 (July 2014), pewtrusts.org/~media/Assets/2014/07/StatePrisonHealthCareSpendingReport.pdf.

¹²³ See BUREAU OF JUSTICE STATISTICS, NCJ 239672, STATE CORRECTIONS EXPENDITURES, FY 1982–2010, at 7 (rev. 2014)), bjs.gov/content/pub/pdf/scefy8210.pdf. While at least 35 states reported increases in per-capital spending on inmate health during this period, 8 states—Illinois, Maine, Nevada, North Dakota, Oklahoma, Pennsylvania, Texas, and West Virginia—reported decreases. *See id.*

¹²⁴ *See, e.g.*, PEW CHARITABLE TRUSTS & JOHN D. & CATHERINE T. MACARTHUR FOUND., STATE PRISON HEALTH CARE SPENDING 9 (July 2014), pewtrusts.org/~media/Assets/2014/07/StatePrisonHealthCareSpendingReport.pdf (citing Henry J. Steadman et al., *Prevalence of Serious Mental Illness Among Jail Inmates*, 60 PSYCHIATRIC SERVS. 761–65 (2009)).

¹²⁵ *See id.* (citing NAT'L CTR. ON ADDICTION & SUBSTANCE ABUSE AT COLUMBIA UNIV., BEHIND BARS II: SUBSTANCE ABUSE AND AMERICA'S PRISON POPULATION (February 2010)).

¹²⁶ *See, e.g.*, ENVTL. PROT. AGENCY, EPA 430-B-06-005, EXCESSIVE HEAT EVENTS GUIDEBOOK 17 (2006), epa.gov/heatisland/about/pdf/EHEguide_final.pdf. *See also* Gates v. Cook, 376 F.3d 323, 334 (5th Cir. 2004) (noting lower court's finding that probability of heat-related illness is “dramatically more [extreme] . . . for mentally ill inmates who often do not take appropriate behavioral steps to deal with the heat”).

of previous heatstroke, can increase an individual's risk of suffering heatstroke or increase the likelihood of death from hyperthermia.¹²⁷ A sedentary lifestyle, almost a defining characteristic of life in correctional facilities, can also increase the risk.¹²⁸ Those who are not acclimated to high temperatures are also more susceptible to heat stress.¹²⁹

The Bureau of Justice Statistics surveyed prison and jail inmates in 2011 and 2012, asking them to assess their own health.¹³⁰ The surveys asked about a number of chronic health conditions that can increase susceptibility to heat stress, including asthma, diabetes, heart and kidney problems, and hypertension.

To identify both those at risk of future medical needs and those with current medical needs, the survey asked inmates whether they ever had a chronic condition and whether they currently had one.¹³¹ Five out of ten state and federal prisoners and local jail inmates reported ever having a chronic condition and four out of ten reported currently having a chronic condition.¹³² Almost a quarter of all prisoners and jail inmates reported ever having multiple

¹²⁷ See, e.g., Ekta Choudhary & Ambarish Vaidyanathan, *Heat Stress Illness Hospitalizations: Environmental Public Health Tracking Program, 20 States, 2001–2010*, 63 MORBIDITY & MORTALITY WKLY. REP. SURVEILLANCE SUMMARIES, Dec. 12, 2014, at 1, cdc.gov/mmwr/pdf/ss/ss6313.pdf; NAT'L CLIMATE CHANGE ADAPTATION RESEARCH FACILITY, CASE STUDY: IMPACTS AND ADAPTATION RESPONSES OF INFRASTRUCTURE AND COMMUNITIES TO HEATWAVES 44 (2010) (Austl.), nccarf.edu.au/business/sites/www.nccarf.edu.au/business/files/attached_files_publications/Pub_13_10_Southern_Cities_Heatwaves_-_Complete_Findings.pdf; ENVTL. PROT. AGENCY, EPA 430-B-06-005, EXCESSIVE HEAT EVENTS GUIDEBOOK 17 (2006), epa.gov/heatisland/about/pdf/EHEguide_final.pdf; *Heat-Related Deaths—United States, 1999–2003*, 55 MORBIDITY & MORTALITY WKLY. REP., 796, 797 tbl. (2006), stacks.cdc.gov/view/cdc/28686; Roy Sucholeiki, *Heatstroke*, 25 SEMINARS IN NEUROLOGY 307, 310 tbl.1 (2005); *Heatstroke Risk Factors*, MAYO CLINIC (July 12, 2014), mayoclinic.org/diseases-conditions/heat-stroke/basics/risk-factors/con-20032814; *Preventing Heat-Related Illness*, WISC. DEP'T OF HEALTH SERVS. (Jan. 16, 2014), dhs.wisconsin.gov/climate/weather/heatillness.htm; *Extreme Heat: A Prevention Guide to Promote Your Personal Health and Safety*, CTRS. FOR DISEASE CONTROL & PREVENTION, emergency.cdc.gov/disasters/extremeheat/heat_guide.asp (last visited Aug. 1, 2015).

¹²⁸ See *Heatstroke Risk Factors*, MAYO CLINIC (July 12, 2014), mayoclinic.org/diseases-conditions/heat-stroke/basics/risk-factors/con-20032814.

¹²⁹ See Roy Sucholeiki, *Heatstroke*, 25 SEMINARS IN NEUROLOGY 307, 310 tbl.1 (2005); Barbara K. Bailes & Kathleen Reeve, *Prevention of Heat-Related Illness*, J. FOR NURSE PRAC., Mar. 2007, at 161, 164 tbl.1.

¹³⁰ BUREAU OF JUSTICE STATISTICS, NCJ 248491, MEDICAL PROBLEMS OF STATE AND FEDERAL PRISONERS AND JAIL INMATES 1 (2015), bjs.gov/content/pub/pdf/mpsfpi1112.pdf.

¹³¹ See *id.* at 2 (explaining rationale).

¹³² *Id.* at 5 tbl.3.

chronic conditions.¹³³ Table 2 shows the prevalence among prisoners and jail inmates of ever having or currently having one of several chronic conditions.

Table 2. Chronic conditions among prisoners and jail inmates				
Condition	State & federal prisoners		Local jail inmates	
	<i>Ever</i>	<i>Current</i>	<i>Ever</i>	<i>Current</i>
High blood pressure/hypertension	30.2%	23.0%	26.3%	20.2%
Asthma	14.9%	11.9%	20.1%	15.6%
Heart-related problems	9.8%	5.1%	10.4%	6.0%
Diabetes/high blood sugar	9.0%	7.4%	7.2%	5.3%
Kidney-related problems	6.1%	3.4%	6.7%	3.8%
Stroke-related problems	1.8%	0.9%	2.3%	1.0%
Source: BUREAU OF JUSTICE STATISTICS, NCJ 248491, MEDICAL PROBLEMS OF STATE AND FEDERAL PRISONERS AND JAIL INMATES, 2011–12, at 3 tbl.1, 4 tbl.2, 21 app'x tbl.7 (2015), bjs.gov/content/pub/pdf/mpsfpi1112.pdf .				

One unexpected finding was that among both prisoners and jail inmates the rates of ever having high blood pressure or diabetes had increased significantly since BJS last surveyed those populations, as had the rate among jail inmates of ever having asthma.¹³⁴ The rate of diabetes among prisoners and jail inmates had roughly doubled and the rate of hypertension was around one and a half times what earlier surveys showed.¹³⁵ Among jail inmates, the rate of

¹³³ *Id.* at 8.

¹³⁴ See *id.* at 6–7. Previously, the Bureau of Justice Statistics had conducted separate surveys of prisoners and jail inmates. It last surveyed prisoners in 2004 and jail inmates in 2002. See BUREAU OF JUSTICE STATISTICS, NCJ 221740, MEDICAL PROBLEMS OF PRISONERS (rev. 2008), bjs.gov/content/pub/pdf/mppp.pdf; BUREAU OF JUSTICE STATISTICS, NCJ 210696, MEDICAL PROBLEMS OF JAIL INMATES (2006), bjs.gov/content/pub/pdf/mpji.pdf.

¹³⁵ See BUREAU OF JUSTICE STATISTICS, NCJ 248491, MEDICAL PROBLEMS OF STATE AND FEDERAL PRISONERS AND JAIL INMATES, 2011–12, at 6–7 (2015), bjs.gov/content/pub/pdf/mpsfpi1112.pdf. Among prisoners, the rate of diabetes reported was 483 per 10,000 in 2004 and 899 per 10,000 in 2011–2012. Among jail inmates it was 361 per 10,000 in 2002 and 723 per 10,000 in 2011–2012. Among prisoners, the rate of hypertension reported was 2,093 per 10,000 in 2004 and 3,020 per 10,000 in 2011–2012. Among jail inmates it was 1,803 per 10,000 in 2002 and 2,626 per 10,000 in 2011–2012. The asthma rate reported by jail inmates was 1,502 per 10,000 in 2002 and 2,012 per 10,000 in 2011–2012. *Id.* at 6–7, & file mpsfpji1112f03.csv (2015), available at bjs.gov/index.cfm?ty=pbdetail&iid=5219 (click on “Comma-delimited format (CSV)” to download data archive, then unzip downloaded archive “mpsfpi1112.zip,” then open file “mpsfpi1112f03.csv”).

asthma had gone up by about a third.¹³⁶ Noting that the newest survey had actually used more restrictive wording when asking about chronic conditions, BJS called these “true increases.”¹³⁷

Female inmates were significantly more likely to report ever having a chronic condition than males. Among state and federal prisoners, 65 percent of females and 50 percent of males reported ever having a chronic condition; among local jail inmates the respective percentages were 67 percent of females and 48 percent of males.¹³⁸ Prevalence of ever having a chronic condition also varied significantly by age: 73 percent of state and federal prisoners and 79 percent of local jail inmates age 50 or older reported ever having a chronic condition, compared to 28 percent of prisoners and 38 percent of jail inmates in the 18-to-24 age group.¹³⁹

The survey also found that clear majorities of prisoners and jail inmates were overweight, obese, or morbidly obese.¹⁴⁰ Male prisoners and jail inmates were more likely to be overweight than their female counterparts, but obesity and morbid obesity were significantly more prevalent among females than among males.¹⁴¹ Prisoners and jail inmates age 50 or older were much more likely to be overweight, obese, or morbidly obese than those in the 18-to-24 age group.¹⁴² As noted previously, excess body weight is a risk factor for increased susceptibility to heat stress.

¹³⁶ See BUREAU OF JUSTICE STATISTICS, NCJ 248491, MEDICAL PROBLEMS OF STATE AND FEDERAL PRISONERS AND JAIL INMATES, 2011–12, at 6–7 (2015), bjs.gov/content/pub/pdf/mpsfpi1112.pdf.

¹³⁷ *Id.* at 6.

¹³⁸ See *id.* at 5 tbl.3. Note that the demographic makeup of the prison population is not identical to the demographic makeup of the jail population. Consequently, the data reported above cannot be read to show that female jail inmates are more likely to report ever having a chronic condition than female prison inmates. This caveat applies to the data throughout this section.

¹³⁹ See *id.* at 5 tbl.3.

¹⁴⁰ Among prisoners, 46 percent were overweight, 26 percent were obese, and 2 percent were morbidly obese. The situation was slightly better for jail inmates: 39 percent were overweight, 20 percent were obese, and 2 percent were morbidly obese. *Id.* at 8 tbl.5. The survey used the body mass index to determine if a person was overweight (BMI of 25.0 to 29.9), obese (BMI of 30.0 to 39.9), or morbidly obese (BMI of 40 or greater). *Id.* at 15.

¹⁴¹ Among male prisoners, 47 percent were overweight, 25 percent were obese, and 2 percent were morbidly obese. Among female prisoners, 35 percent were overweight, 37 percent were obese, and 6 percent were morbidly obese. With regard to jail inmates, among males 40 percent were overweight, 19 percent were obese, and 1 percent were morbidly obese. Among females, 32 percent were overweight, 29 percent were obese, and 8 percent were morbidly obese. *Id.* at 17 app. tbl.2–3.

¹⁴² Nearly 80 percent of prisoners and 63 percent of jail inmates age 50 or over were at least overweight, compared to 57 percent of prisoners and 46 percent of jail inmates age 18 to 24. *Id.* at 17 app. tbl.2–3.

2.3.3.4 Drug Use

The BJS health survey found that 66 percent of prisoners and 40 percent of jail inmates with current chronic conditions were taking prescription medication.¹⁴³ Certain drugs can interfere with thermoregulation, the body's ability to keep internal temperature around 98.6°F.¹⁴⁴ Other drugs can increase metabolic heat production, constrict blood vessels, impair sweating, and have other effects that raise the risk of heat-related illness. Inmates (and correctional officers) who take any of these drugs may be more susceptible to adverse health consequences of heat and should be closely monitored during extreme heat events. A federal court of appeals recently upheld district court orders that pretrial detainees taking psychotropic drugs, which are among those that compromise thermoregulation, be held in cells where temperatures do not exceed 85°F.¹⁴⁵

Anticholinergic drugs and drugs that have anticholinergic effects inhibit sweating, reducing the body's ability to eliminate excess heat.¹⁴⁶ These medicines include some antihistamines,¹⁴⁷ parkinsonism medications, belladonna alkaloids such as atropine and scopolamine,

¹⁴³ *Id.* at 10 tbl.7. Among those with chronic conditions who were not taking prescription medication, 20 percent of prisoners and 39 percent of jail inmates explained that they had not seen a doctor about their condition. *Id.*

¹⁴⁴ See K. C. Mendoza & J. D. Griffin, *Thermoregulation*, in *ENCYCLOPEDIA OF BEHAVIORAL NEUROSCIENCE* 400, 400 (George F. Koob et al. eds. 2010). For detailed discussions of the mechanisms by which drugs interfere with thermoregulation, see generally Peter Lomax & Eduard Schönbaum, *The Effects of Drugs on Thermoregulation During Exposure to Hot Environments*, in 115 *PROGRESS IN BRAIN RESEARCH* 193–204 (H. S. Sharma & J. Westman eds., 1998); Wesley G. Clark & J. M. Lipton, *Drug-Related Heatstroke*, 26 *PHARMACOLOGY & THERAPEUTICS* 345–88 (1984).

¹⁴⁵ See *Graves v. Arpaio*, 623 F.3d 1043, 1049 (9th Cir. 2010) (“Accepting the district court’s factual finding that temperatures in excess of 85°F greatly increase the risk of heat-related illness for pretrial detainees taking psychotropic medications, it follows that the Eighth Amendment prohibits housing such pretrial detainees in areas where the temperature exceeds 85°F.”).

¹⁴⁶ See Mary Linda Stotter Cuddy, *The Effects of Drugs on Thermoregulation*, 15 *AACN CLINICAL ISSUES* 238, 242–43 (2004); Mauricio Martinez et al., *Drug-Associated Heat Stroke*, 95 *S. MED. J.* 799, 801 (2002).

¹⁴⁷ A recent study of older prisoners in Texas found a high incidence of inappropriate prescription and use of antihistamines. See Brie A. Williams et al., *Medication Prescribing Practices for Older Prisoners in the Texas Prison System*, 100 *AM. J. OF PUB. HEALTH* 756–60 (2010), [ncbi.nlm.nih.gov/pmc/articles/PMC2836339/pdf/756.pdf](https://pubmed.ncbi.nlm.nih.gov/pmc/articles/PMC2836339/pdf/756.pdf).

neuroleptics (a broad category of antipsychotics), antispasmodics, bronchodilators, and tricyclic antidepressants.¹⁴⁸

Many antipsychotic drugs, which are widely used in corrections, can affect central thermoregulatory processes, causing the body to overheat by reducing cutaneous blood flow, and can also have anticholinergic effects.¹⁴⁹ Among these are phenothiazines, thioxanthenes, and butyrophenones.¹⁵⁰ Clozapine, used to treat schizophrenia, is also associated with increased incidence of heatstroke.¹⁵¹ According to an internal report by the University of Texas Medical Branch, which provides health care to Texas inmates, nearly 80% of the patients on its mental health caseload in January 2010 were being treated with psychotropic medications.¹⁵²

Sympathomimetic drugs, a group of medications that includes amphetamines, methamphetamines, ephedrine, and pseudoephedrine, elevate body temperatures, constrict blood vessels (reducing the body's ability to shed excess heat), and interfere with the thermoregulatory process at a basic level.¹⁵³

Diuretic medications, which promote the excretion of water through urination, can cause dehydration, a particular danger in conditions of extreme heat.¹⁵⁴ Monoamine oxidase inhibitors, benztropine, trifluoperazine, and ephedra-containing dietary supplements raise

¹⁴⁸ See Mary Linda Stotter Cuddy, *The Effects of Drugs on Thermoregulation*, 15 AACN CLINICAL ISSUES 238, 243, 244 tbl.1 (2004); Mauricio Martinez et al., *Drug-Associated Heat Stroke*, 95 S. MED. J. 799, 801 (2002); Peter Lomax & Eduard Schönbaum, *The Effects of Drugs on Thermoregulation During Exposure to Hot Environments*, in 115 PROGRESS IN BRAIN RESEARCH 193, 199 (H. S. Sharma & J. Westman eds., 1998).

¹⁴⁹ See Mauricio Martinez et al., *Drug-Associated Heat Stroke*, 95 S. MED. J. 799, 801 (2002).

¹⁵⁰ See *id.* at 801–802; Peter Lomax & Eduard Schönbaum, *The Effects of Drugs on Thermoregulation During Exposure to Hot Environments*, in 115 PROGRESS IN BRAIN RESEARCH 193, 197 (H. S. Sharma & J. Westman eds., 1998).

¹⁵¹ See Jeffrey S. S. Kwok & Thomas Y. K. Chan, *Recurrent Heat-Related Illnesses During Antipsychotic Treatment*, 39 ANNALS PHARMACOTHERAPY 1940, 1941 (2005).

¹⁵² BEN G. RAIMER ET AL., HEALTH CARE IN THE TEXAS PRISON SYSTEM: A LOOMING FISCAL CRISIS 5 (2010), available at utmbhealth.com/doc/Page.asp?PageID=DOC000496. The report noted that “[m]ore than 864,000 prescriptions for psychotropic medications were filled for TDCJ offenders in FY 2009, representing an increase of nearly 114% since FY 2002.” *Id.*

¹⁵³ See Mary Linda Stotter Cuddy, *The Effects of Drugs on Thermoregulation*, 15 AACN CLINICAL ISSUES 238, 242 (2004); Mauricio Martinez et al., *Drug-Associated Heat Stroke*, 95 S. MED. J. 799, 801 (2002).

¹⁵⁴ See, e.g., Jeffrey S. S. Kwok & Thomas Y. K. Chan, *Recurrent Heat-Related Illnesses During Antipsychotic Treatment*, 39 ANNALS PHARMACOTHERAPY 1940, 1941 (2005).

body temperatures by increasing metabolism.¹⁵⁵ Other medications and substances that may contribute to heat-related illness include lithium and some anticonvulsants, antiemetics, benzodiazepines, beta blockers, calcium-channel blockers, laxatives, stimulants for attention-deficit/hyperactivity disorder, tranquilizers, and vasoconstrictors.¹⁵⁶

Some illegal drugs, such as cocaine and ecstasy, also raise the risk of suffering heat-related illness.¹⁵⁷ While correctional departments face practical challenges gauging prevalence of illegal drug use within their facilities, and may have disincentives to acknowledge that it takes place at all, they should at least be aware of its implications for inmate health during periods of elevated temperatures.¹⁵⁸

2.4 Correctional Staff Population

One in nine state employees works in a prison.¹⁵⁹ For correctional officers (COs), workplace conditions are in large part the same as inmate housing conditions. Thus, rising indoor temperatures present both correctional issues and labor issues. This section provides an overview of the CO population in US prisons and jails.

2.4.1 Size

The Occupational Outlook Handbook, put out by the Bureau of Labor Statistics, says that COs held roughly 469,500 jobs in 2012, though it does not break this number down at all or

¹⁵⁵ See Mary Linda Stotter Cuddy, *The Effects of Drugs on Thermoregulation*, 15 AACN CLINICAL ISSUES 238, 242–43 (2004); Theresa Pluth Yeo, *Heat Stroke: A Comprehensive Review*, 15 AACN CLINICAL ISSUES 280, 283 tbl.1 (2004).

¹⁵⁶ See *Heatstroke Risk Factors*, MAYO CLINIC (July 12, 2014), mayoclinic.org/diseases-conditions/heat-stroke/basics/risk-factors/con-20032814; *Preventing Heat-Related Illness*, WISC. DEP'T OF HEALTH SERVS. (Jan. 16, 2014), dhs.wisconsin.gov/climate/weather/heatillness.htm; James L. Glazer, *Management of Heatstroke and Heat Exhaustion*, 71 AM. FAM. PHYSICIAN 2133, 2135 tbl.1 (2005), aafp.org/afp/2005/0601/p2133.pdf; Mary Linda Stotter Cuddy, *The Effects of Drugs on Thermoregulation*, 15 AACN CLINICAL ISSUES 238, 243 (2004).

¹⁵⁷ See, e.g., Theresa Pluth Yeo, *Heat Stroke: A Comprehensive Review*, 15 AACN CLINICAL ISSUES 280, 283 tbl.1, 284 (2004); Peter Lomax & Eduard Schönbaum, *The Effects of Drugs on Thermoregulation During Exposure to Hot Environments*, in 115 PROGRESS IN BRAIN RESEARCH 193, 198, 200–202 (H. S. Sharma & J. Westman eds., 1998).

¹⁵⁸ The same certainly goes for illegal drug use by correctional officers.

¹⁵⁹ ROBERT A. FERGUSON, *INFERNO: AN ANATOMY OF AMERICAN PUNISHMENT* 3 (2014).

indicate its source.¹⁶⁰ The Bureau of Justice Statistics' Census of State and Federal Correctional Facilities and Census of Jails both provide some data on the number of people who work in state and federal facilities, though, as noted earlier, neither census has been updated recently. The Jails in Indian Country series is more current.

The 2005 Census of State and Federal Correctional Facilities found that about 420,000 employees were working in such facilities at the end of 2005.¹⁶¹ Of these, 295,000—roughly two-thirds—were COs, supervisors, and others who worked in direct contact with inmates and therefore worked at least some of the time in the same environment in which inmates lived.¹⁶² The 2006 Census of Jails counted around 231,500 jail employees.¹⁶³ The 2013 Jails in Indian Country survey identified 1,642 employees working in 73 facilities, 1,106 of them (again, about two-thirds) in direct contact with inmates at least half of the time.¹⁶⁴

2.4.2 Health

Information about COs' physical health is not easy to come by even though, according to the Bureau of Labor Statistics, "correctional officers have one of the highest rates of injuries and illnesses of all occupations" because of exposure to violence and contagious diseases in the workplace.¹⁶⁵ Chronic illnesses and drug use (both legal and illegal) certainly put some correctional workers at greater risk of suffering heat stress. COs who work in facilities that lack air conditioning may be at greater risk than inmates because they may be more physically active

¹⁶⁰ See *Correctional Officers*, in BUREAU OF LABOR STATISTICS, OCCUPATIONAL OUTLOOK HANDBOOK, 2014–15 EDITION (2014), bls.gov/ooh/protective-service/correctional-officers.htm.

¹⁶¹ See BUREAU OF JUSTICE STATISTICS, NCJ 222182, CENSUS OF STATE AND FEDERAL CORRECTIONAL FACILITIES, 2005, at 20 app. tbl.12 (2008), bjs.gov/content/pub/pdf/csfcf05.pdf. Since numbers were not reported for several facilities, the actual number of correctional employees was higher. The Bureau of Justice Statistics estimated the actual total to be approximately 445,055. See *id.* at 7, 20 app. tbl.12.

¹⁶² See *id.* at 4, 20 app. tbl.12.

¹⁶³ See BUREAU OF JUSTICE STATISTICS, NCJ 230188, CENSUS OF JAIL FACILITIES, 2006, at 23 tbl.12 (2011), bjs.gov/content/pub/pdf/cjf06.pdf. The Bureau of Justice Statistics estimated the actual total to be closer to 234,000. See *id.* at 23 tbl.12, 27.

¹⁶⁴ See BUREAU OF JUSTICE STATISTICS, NCJ 247017, JAILS IN INDIAN COUNTRY, 2013, at 7 (2014), bjs.gov/content/pub/pdf/jic13.pdf.

¹⁶⁵ *Correctional Officers*, in BUREAU OF LABOR STATISTICS, OCCUPATIONAL OUTLOOK HANDBOOK, 2014–15 EDITION (2014), bls.gov/ooh/protective-service/correctional-officers.htm (Work Environment tab).

and burdened by heavier clothing and work equipment, all of which may result in rapid accumulation of metabolic heat.¹⁶⁶

Texas COs have sounded alarms about the deleterious impact on their health from working in the state's prisons, which generally lack air conditioning. In a 2013 op-ed piece that ran in the *New York Times*, union leader Lance Lowry described seeing fellow officers "pass out from the heat" and noted that during the previous year, "92 state correctional officers reported heat-related illnesses as a result of working in prisons lacking climate control."¹⁶⁷ According to Lowry,

a physician's examination isn't required for applicants—even though they'll be expected to work in a physically demanding job up to 12 hours a day, sometimes in heavy Kevlar vests, often in extreme heat. And just as the inmate population is aging, the officer population is getting older, too: with the economic downturn, we've seen retired officers returning to the job. I once worked with an officer who was 82 years old. Like the older inmates, many of these older officers take medications that make them particularly sensitive to the heat, including antidepressants and diuretics to control high blood pressure.¹⁶⁸

The paucity of information on COs' physical health, particularly as it relates to their susceptibility to heat stress, makes it difficult to gauge what adaptive measures may be needed to ensure their wellbeing. Accounts like those of Lowry, however, underline the potential risks to the correctional workforce from working in inadequately cooled environments. It goes without saying that when COs succumb to heat stress, more is at stake than their own health.

¹⁶⁶ See Sheila Arbury et al., *Heat Illness and Death Among Workers: United States, 2012–2013*, 63 MORBIDITY & MORTALITY WKLY. REP. 661, 662 (2014), cdc.gov/mmwr/pdf/wk/mm6331.pdf ("Heat-related deaths often occur in occupations in which workers are performing tasks in hot environments, causing them to build metabolic heat faster than their bodies can release heat and cool down.").

¹⁶⁷ Lance Lowry, Opinion, *In Texas, Inmates and Officers Swelter*, N.Y. TIMES, Nov. 22, 2013, at A29, nytimes.com/2013/11/22/opinion/in-texas-inmates-and-officers-swelter.html.

¹⁶⁸ *Id.* (paragraph break omitted).

2.5 Correctional Reforms

Starting around 2007, concerns about rising correctional costs, prison overcrowding (particularly in California), and growing doubts about the efficacy of mass incarceration began to provide the impetus for what has become a significant wave of reform in corrections.¹⁶⁹ Many states have followed a “justice reinvestment” approach to correctional reform, redirecting correctional dollars into evidence-based policies and practices shown to improve public safety while reducing incarceration rates.¹⁷⁰ States have revisited sentencing policies, including those that imposed mandatory minimums and required enhanced sentences for repeat offenders. They have focused attention and resources on alternatives to incarceration for low-level offenses, including drug and mental-health treatment. They have streamlined the parole process and invested in more effective probation and parole supervision aimed at getting former prisoners back on their feet without reoffending.¹⁷¹ For the most part, these reforms have enjoyed bipartisan backing and public support. In 2010, the Bureau of Justice Assistance, part of the US Department of Justice, and the Public Safety Performance Project at the Pew Charitable Trusts partnered to launch the Justice Reinvestment Initiative, which works with a number of

¹⁶⁹ Some advocates of reform worry that current policy discussions have marginalized concerns such as racial equity, human rights, and basic fairness, noting that an improving economy could undercut the appetite for reform. *See, e.g.,* OPPORTUNITY AGENDA, AN OVERVIEW OF PUBLIC OPINION AND DISCOURSE ON CRIMINAL JUSTICE ISSUES 3 (2014), opportunityagenda.org/files/field_file/2014.08.23-CriminalJusticeReport-FINAL_0.pdf (“The almost exclusive focus on fiscal concerns as the justification for reform is problematic, as is the absence of a long-term vision of what a model criminal justice system would look like.”).

¹⁷⁰ So-called justice reinvestment states include Alabama, Arizona, Arkansas, California, Connecticut, Georgia, Hawai’i, Idaho, Illinois, Indiana, Kansas, Kentucky, Michigan, Mississippi, Missouri, Nebraska, Nevada, New Hampshire, New Jersey, North Carolina, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Texas, Utah, Vermont, Washington, Wisconsin, and West Virginia. *See Justice Reinvestment*, JUST. CTR., csgjusticecenter.org/jr (last visited Aug. 1, 2015) (click on “States”).

¹⁷¹ For a helpful chart showing a long list of policy reforms and identifying by year which have been adopted by specific states, see *Sentencing and Corrections Reforms in Justice Reinvestment States*, PEW CHARITABLE TRUSTS (May 2014), pewtrusts.org/~media/Assets/2013/PSPP_Sentencing_and_Corrections_Reform_Matrix.pdf.

other public and private organizations to provide technical assistance to states and localities as they design and implement such data-driven reforms.¹⁷²

Even though the need to adapt corrections in the face of climate change has not informed these recent reforms, policies that can reduce the size of the incarcerated population without compromising public safety contribute to the adaptation cause. Simply put, the smaller the number of people held in jails and prisons, the easier it will be to protect the inmate population and the correctional workforce and to maintain the facilities of confinement as temperatures rise.

2.6 Structural Vulnerabilities to Extreme Heat

The risks that extreme heat presents to the correctional sector reflect the particular characteristics surveyed above. Its greatest vulnerability by far is its vast population of inmates, with their elevated susceptibility to heat-related illness and limited capacity to care for themselves. Rising temperatures also jeopardize the correctional officers who must perform difficult and stressful work in the same conditions in which inmates live. Electrical systems and other critical components of penal facilities themselves may also be threatened by extreme heat.¹⁷³

The challenge of protecting inmates from heat and other harmful impacts of climate change is made all the more difficult by structural factors over which correctional departments have little or no control. No matter how many inmates are placed in correctional custody, no matter how long they are sentenced to remain in custody, no matter how unhealthy they may be, no matter what particular security risks they may pose, correctional departments must be prepared to ensure their basic wellbeing, whatever the cost, notwithstanding scarce financial resources and often inadequate facilities.

¹⁷² See *What Is JRI?*, BUREAU JUST. ASSISTANCE, bja.gov/programs/justicereinvestment/what_is_jri.html (last visited Aug. 1, 2015); *Public Safety Performance Project*, PEW CHARITABLE TRUSTS, pewtrusts.org/en/projects/public-safety-performance-project (last visited Aug. 1, 2015).

¹⁷³ For a discussion of the impacts of heat waves on the electricity generating sector and recommendations for adaptation to minimize those impacts, see SOFIA AIVALIOTI, *ELECTRICITY SECTOR ADAPTATION TO HEAT WAVES* (2015), web.law.columbia.edu/sites/default/files/microsites/climate-change/white_paper_-_electricity_sector_adaptation_to_heat_waves.pdf

This section has provided an overview of the structural features of corrections such as the populations of inmates and correctional officers and the facilities in which inmates are housed. The next section explores legal considerations that shape the challenges posed by heat and other impacts of climate change, as well as the options available for meeting those challenges.

3 HEAT, CORRECTIONS, AND THE LAW

Like any division of government, the correctional sector needs to adapt to our changing climate so it can continue to fulfill its essential functions. Beyond that basic motive for adaptation, a number of legal considerations arise in the case of corrections that present further reasons to adapt. Some of these are unique to corrections, others not. Many amount to, in effect, another form of vulnerability to climate change that correctional departments face. While these legal vulnerabilities may be less tangible than physical or technological vulnerabilities such as the inability to maintain acceptable interior temperatures during heat waves or the location of prisons on flood plains, they are no less pressing.

3.1 Inmate Litigation

Inmates and their advocates have long looked to the courts for protection against dangerous or unjustly harsh conditions of confinement. Both constitutional and statutory claims can compel correctional departments to implement reforms in how they house and care for inmates. As temperatures rise with the changing climate, correctional departments can expect to see an increase in heat-based litigation.

3.1.1 Constitutional Claims

Corrections is by far the largest on a very short list of sectors for which the failure to adapt has constitutional implications.¹⁷⁴ This exceptional legal vulnerability provides a strong incentive for adaptation.

¹⁷⁴ As discussed below, taking people into custody triggers constitutional duties of care. Outside the correctional context, this occurs in very limited circumstances, such as when people are detained following arrest, *Revere v. Massachusetts General Hospital*, 463 U.S. 239, 244–45 (1983), and when individuals are involuntarily committed, *Youngberg v. Romeo*, 457 U.S. 307, 315–16 (1982).

The Eighth Amendment to the United States Constitution forbids cruel and unusual punishment.¹⁷⁵ This guarantee embodies “broad and idealistic concepts of dignity, civilized standards, humanity and decency,”¹⁷⁶ and requires that penal measures conform to “the evolving standards of decency that mark the progress of a maturing society.”¹⁷⁷ “It is undisputed that the treatment a prisoner receives in prison and the conditions under which he is confined are subject to scrutiny under the Eighth Amendment.”¹⁷⁸ Conditions of confinement may be “restrictive and even harsh,” and “the Constitution does not mandate comfortable prisons.”¹⁷⁹ But inmates may not be held in conditions that deprive them of “the minimal civilized measure of life’s necessities.”¹⁸⁰

In 1991, the United States Supreme Court recognized warmth as one such essential human need and observed that “a low cell temperature at night combined with a failure to issue blankets” could amount to an Eighth Amendment violation.¹⁸¹ Since then, numerous federal courts have applied the same logic to allegations of a failure to protect inmates against excessive heat, recognizing that allowing inmates to be exposed to such extreme temperatures may constitute cruel and unusual punishment.¹⁸²

Unlike the prison population, which consists primarily of offenders who have been convicted and sentenced to a term of confinement, much of the jail population is made up of people who have not yet stood trial. Because those individuals are not in custody for the purpose of punishment, the Eighth Amendment does not apply to them.¹⁸³ Instead, the Due

¹⁷⁵ U.S. CONST. amend. VIII. The Cruel and Unusual Punishments Clause applies to the states by way of the Fourteenth Amendment. *Robinson v. California*, 370 U.S. 660, 675 (1962).

¹⁷⁶ *Estelle v. Gamble*, 429 U.S. 97, 102 (1976) (quoting *Jackson v. Bishop*, 404 F.2d 571, 579 (8th Cir. 1968)).

¹⁷⁷ *Trop v. Dulles*, 356 U.S. 86, 101 (1958).

¹⁷⁸ *Helling v. McKinney*, 509 U.S. 25, 31 (1993).

¹⁷⁹ *Rhodes v. Chapman*, 452 U.S. 337, 347–48 (1981).

¹⁸⁰ *Id.* at 347.

¹⁸¹ *Wilson v. Seiter*, 501 U.S. 294, 304 (1991).

¹⁸² *E.g.*, *Walker v. Schult*, 717 F.3d 119, 128 (2d Cir. 2013); *Blackmon v. Garza*, 484 F. App’x 866, 870–72 (5th Cir. 2012); *Hathaway v. Holder*, 491 F. App’x 207, 208 (2d Cir. 2012); *Graves v. Arpaio*, 623 F.3d 1043, 1049 (9th Cir. 2010); *Vasquez v. Frank*, 209 F. App’x 538, 541 (7th Cir. 2006); *Hearns v. Terhune*, 413 F.3d 1036, 1043 (9th Cir. 2005); *Chandler v. Crosby*, 379 F.3d 1278, 1294 (11th Cir. 2004); *Gates v. Cook*, 376 F.3d 323, 340 (5th Cir. 2004); *Wilson v. Seiter*, 893 F.2d 861, 865 (6th Cir. 1990), *vacated on other grounds*, 501 U.S. 294 (1991).

¹⁸³ *See City of Revere v. Mass. Gen. Hosp.*, 463 U.S. 239, 244 (1983).

Process Clauses of the Fifth and Fourteenth Amendments protect federal and state pretrial detainees, respectively, from mistreatment while in custody.¹⁸⁴

[W]hen the State takes a person into its custody and holds him there against his will, the Constitution imposes upon it a corresponding duty to assume some responsibility for his safety and general well-being. . . . The rationale for this principle is simple enough: when the State by the affirmative exercise of its power so restrains an individual's liberty that it renders him unable to care for himself, and at the same time fails to provide for his basic human needs—*e.g.*, food, clothing, shelter, medical care, and reasonable safety—it transgresses the substantive limits on state action set by the Eighth Amendment and the Due Process Clause.¹⁸⁵

Indeed, “the due process rights of a [pretrial detainee] . . . are at least as great as the Eighth Amendment protections available to a convicted prisoner.”¹⁸⁶

Current inmates and detainees, as well as former inmates, can assert claims based on allegedly unconstitutional conditions of confinement.¹⁸⁷ The survivors of deceased inmates can bring such claims as well.¹⁸⁸

As temperatures inside correctional facilities rise with climate change, constitutional claims brought by inmates and their survivors will become more common and will arise in jurisdictions that did not previously see litigation concerning extreme heat conditions. Correctional departments that fail to adapt to the changing climate will become increasingly vulnerable to such suits. On the other hand, correctional departments that make diligent

¹⁸⁴ *E.g., id.*; *Bistran v. Levi*, 696 F.3d 352, 367 (3d Cir. 2012); *Caiozzo v. Koreman*, 581 F.3d 63, 69 (2d Cir. 2009).

¹⁸⁵ *DeShaney v. Winnebago Cty. Dep't of Soc. Servs.*, 489 U.S. 189, 199–200 (1989) (citations omitted).

¹⁸⁶ *Mass. Gen. Hosp.*, 463 U.S. at 244.

¹⁸⁷ *See, e.g., Hope v. Pelzer*, 536 U.S. 730, 733 (2002) (suit brought by former inmate).

¹⁸⁸ As of August 2015, the survivors of numerous deceased Texas inmates alleged to have died in custody because of exposure to extreme heat had suits pending in US District Court for the Southern District of Texas. *See Bailey v. Livingston*, No. 4:14-cv-1698; *Caddell v. Livingston*, 4:14-cv-3323; *Hinojosa v. Livingston*, No. 4:14-cv-3311; *Martone v. Livingston*, No. 4:13-cv-3369; *McCollum v. Livingston*, No. 4:14-cv-3253; *Webb v. Livingston*, No. 4:14-cv-3302.

adaptation efforts can reduce if not eliminate their exposure in two ways. First, and most obviously, successful adaptation can prevent or rectify unconstitutional conditions of confinement.¹⁸⁹ Second, even partially successful adaptation efforts may defeat this kind of suit by making it impossible for litigants to prove their cases.

To prevail on a claim that particular conditions of confinement violate the Constitution, a plaintiff must establish two elements, whether proceeding under the Cruel and Unusual Punishments Clause of the Eighth Amendment or under the Due Process Clause of the Fifth or Fourteenth Amendment.¹⁹⁰ First, a plaintiff must show that the challenged conditions, “alone, or in combination,”¹⁹¹ objectively pose a “substantial risk of harm,”¹⁹² even if no harm has yet occurred.¹⁹³ Second, a plaintiff must show that state officials were “subjectively aware of the risk” and, despite that knowledge, acted or failed to act with “deliberate indifference” to the danger presented to the health or safety of inmates.¹⁹⁴ Robust adaptation efforts could make it impossible for inmates or their survivors to make this second necessary showing, since “prison officials who actually knew of a substantial risk to inmate health or safety may be found free from liability if they responded reasonably to the risk, even if the harm ultimately was not averted.”¹⁹⁵

Defending against constitutional claims is expensive. On top of their own litigation costs, which may include hiring outside counsel and expert witnesses, defendants must pay the legal

¹⁸⁹ Note, however, that actual harm already suffered due to conditions that have since been remedied could still provide the basis for an award of monetary damages.

¹⁹⁰ *E.g.*, *King v. Kramer*, 763 F.3d 635, 640 (7th Cir. 2014); *Jackson v. Buckman*, 756 F.3d 1060, 1065–66 (8th Cir. 2014); *Doe v. Robertson*, 751 F.3d 383, 387–88 (5th Cir. 2014); *Keith v. DeKalb County*, 749 F.3d 1034, 1044 n.35 (11th Cir. 2014); *Thomas v. Cumberland Cty.*, 749 F.3d 217, 223 n.4 (3d Cir. 2014); *Caiozzo v. Koreman*, 581 F.3d 63, 71 (2d Cir. 2009).

¹⁹¹ *Rhodes v. Chapman*, 452 U.S. 337, 347 (1981).

¹⁹² *Farmer v. Brennan*, 511 U.S. 825, 834 (1994).

¹⁹³ *See Helling v. McKinney*, 509 U.S. 25, 32–33 (1993) (rejecting argument Eighth Amendment “does not protect against prison conditions that merely threaten to cause health problems in the future, no matter how grave and imminent the threat”).

¹⁹⁴ *Farmer*, 511 U.S. at 829. Subjective awareness of a risk may be inferred where the risk of harm is obvious. *Hope v. Pelzer*, 536 U.S. 730, 738 (2002).

¹⁹⁵ *Farmer*, 511 U.S. at 844.

fees of successful plaintiffs and any money damages that are awarded.¹⁹⁶ They also face the possibility of having to implement court-ordered reforms, which can involve considerable expense and may force them to take measures beyond those they would have chosen had they proactively addressed excessive heat conditions.

Ironically, however, having to comply with court orders can push underfunded correctional departments toward the front of the line for state spending. State legislatures that might otherwise resist spending on correctional institutions have little choice in the matter when a court has ordered corrective measures to cure a constitutional violation. Simply put, “the lack of adequate funds cannot justify unconstitutional treatment of prisoners.”¹⁹⁷

In order to understand how these legal principles can apply in the context of rising temperatures due to climate change, it is helpful to examine cases in which inmates brought constitutional claims based on their confinement in conditions of high heat and humidity. The following two examples of Eighth Amendment litigation come from Mississippi and Louisiana, states where extreme heat is no theoretical future possibility. Both states are within the Fifth Circuit of the federal court system and the plaintiffs in both cases happened to be inmates on death row. Neither of those facts, however, made the legal issues or their analysis atypical.

3.1.1.1 Example 1: Mississippi State Penitentiary in Parchman, Unit 32

In 2002, Willie Russell, an inmate on Mississippi’s death row, Unit 32-C¹⁹⁸ of the Mississippi State Penitentiary in Parchman, filed a class-action suit in US District Court against officials of the Mississippi Department of Corrections (MDOC), alleging that extreme temperatures and

¹⁹⁶ Courts typically exercise the discretion that the Civil Rights Attorney’s Fees Act of 1976, 42 U.S.C. § 1988(b) (2015), gives them to award attorneys’ fees and expenses to plaintiffs who prevail on constitutional claims brought, as these cases are, under 42 U.S.C. § 1983. Courts can also require defendants to pay the fees of experts retained by successful plaintiffs. § 1988(c). The Prison Litigation Reform Act also provides for awards of attorneys’ fees, subject to certain limits. *See* 42 U.S.C. § 1997e(d) (2015).

¹⁹⁷ *Johnson v. Bowers*, 884 F.2d 1053, 1055 (8th Cir. 1989) (citing *Campbell v. Cauthron*, 623 F.2d 503, 508 (8th Cir. 1980)). *See also, e.g., Smith v. Sullivan*, 611 F.2d 1039, 1043–44 (5th Cir. 1980) (“inadequate funding will not excuse the perpetuation of unconstitutional conditions of confinement”); *Detainees of Brooklyn House of Det. for Men v. Malcolm*, 520 F.2d 392, 399 (2d Cir. 1975) (“Inadequate resources of finances can never be an excuse for depriving detainees of their constitutional rights.”).

¹⁹⁸ Unit 32-C was a section of Unit 32, Mississippi’s supermax facility, which opened in 1990.

humidity, an uncontrolled mosquito infestation, and other conditions on death row subjected him and his fellow inmates to cruel and unusual punishment.¹⁹⁹ Based on the evidence presented at a bench trial, the trial judge made the following findings of fact with regard to temperature, humidity, and mosquitos:

The summer temperatures in the Mississippi Delta average in the nineties with high humidity, and Unit 32, for the most part, is not an air-conditioned facility. . . . There are industrial type fans in the hallways to help with air circulation, and most inmates have smaller fans. Relief from the heat can be obtained by keeping the windows open in the cell using fans [sic]. However, keeping the windows open increases the mosquito population in the cells Generally, the ambient temperature in the cells is within reasonable limits except during the summer months. The court finds that the ventilation in Unit 32–C is inadequate to afford prisoners a minimal level of comfort during the summer months. While temperatures obviously run high during the summer months in Mississippi, inmates on lockdown status, such as the inmates on Death Row, must rely on the Mississippi Department of Corrections for minimal relief. The probability of heat-related illness is extreme at Unit 32–C, and is dramatically more so for mentally ill inmates who often do not take appropriate behavioral steps to deal with the heat. Also, the medications commonly given to treat various medical problems interfere with the body’s ability to maintain a normal temperature. The inmates are not afforded extra showers, ice water, or fans if they don’t have fans when the heat index is 90 or above. The court finds that the heat problem extends to all of Unit 32 and possibly throughout Parchman.

The heat problem also exacerbates the problem of pest control. Mosquitoes in Mississippi and the Delta, in particular, are a problem that cannot be eliminated. The court finds, however, that the problem must be addressed and the impact lessened, especially with the incidence of West Nile virus, a mosquito-

¹⁹⁹ See *Russell v. Johnson*, No. 1:02-cv-261, 2003 WL 22208029, *1 (N.D. Miss. May 21, 2003).

born disease, increasing in Mississippi. The court finds that inadequate screening on the cell windows causes the inmates to choose between suffering from the heat or increasing the mosquitoes in their cells. The problems of heat and mosquitoes must be addressed to provide the plaintiffs with conditions that would meet minimal constitutional standards.²⁰⁰

The trial court found that such conditions posed a substantial risk of serious harm and that MDOC officials knew of this risk because it was obvious.²⁰¹ Implicitly finding that the officials' acts or omissions in light of this knowledge demonstrated deliberate indifference, the court concluded that the heat and other challenged conditions constituted cruel and unusual punishment.²⁰²

Turning to remedies, the trial court ordered prison officials to closely monitor the heat index—a combined measure of air temperature and relative humidity²⁰³—in the individual housing tiers.²⁰⁴

If the heat index reaches 90 degrees or above, the defendants will insure that each cell is equipped with a fan, that ice water is available to each inmate, and that each inmate may take one shower during each day when the heat index is 90 degrees or above. As an alternative, the defendants may provide fans, ice water, and daily showers during the months of May through September.²⁰⁵

²⁰⁰ *Id.* at *2–3 (subheading omitted).

²⁰¹ *Id.* at *5.

²⁰² *See id.* at *5 (applying *Farmer* deliberate-indifference test); *see also* *Gates v. Cook*, 376 F.3d 323, 335 (5th Cir. 2004) (noting that *Russell* court found deliberate indifference). While commending the state officials for obtaining accreditation of the Mississippi State Penitentiary by the American Correctional Association during the course of the litigation, the court dismissed the notion that accreditation might moot the issues in the case or insure that conditions at the facility were constitutional. *See Russell*, 2003 WL 22208029, at *2, *5 (citing *Friends of the Earth, Inc. v. Laidlaw Envtl. Servs., Inc.*, 528 U.S. 167, 190 (2002)).

²⁰³ *See, e.g., Heat Index*, NAT'L WEATHER SERV., srh.weather.gov/jetstream/global/hi.htm (last modified Oct. 21, 2011).

²⁰⁴ *See Russell*, 2003 WL 22208029, at *5.

²⁰⁵ *Id.* The court also ordered the defendants to “insure that all cell windows are repaired and screened with 18 gauge window screen or better.” *Id.*

The court cautioned state officials that it would not consider “monetary considerations . . . as a legitimate reason for non-compliance.”²⁰⁶ The court also ordered the state to pay the plaintiffs’ reasonable attorneys’ fees and expenses.²⁰⁷

The Mississippi defendants made a number of arguments on appeal, including that much of the injunctive relief was not required because MDOC was “already meeting, intending to meet, or attempting to meet the standards enunciated by the trial court”; that Parchman’s accreditation by the American Correctional Association (ACA) proved that conditions at the facility did not violate the Eighth Amendment; that none of the injunctions was based on an Eighth Amendment violation; and that no Unit 32-C inmate had ever suffered a serious heat-related illness.²⁰⁸ The US Court of Appeals for the Fifth Circuit rejected all these arguments and held that the constitutional violations, including the heat and mosquito conditions, justified the specific injunctive relief ordered.²⁰⁹

On the issue of whether the injunctive relief was necessary, the Fifth Circuit noted that a defendant’s voluntary conduct can moot a case only under very narrow circumstances, when a defendant meets the “heavy burden” of persuading a court that it is “absolutely clear” that the underlying wrongful conduct cannot reasonably be expected to recur.²¹⁰ The court concluded that the prison officials had not met that heavy burden.²¹¹ Regarding Parchman’s ACA accreditation, the court acknowledged that compliance with ACA standards was not irrelevant but declared it “absurd to suggest that the federal courts should subvert their judgment as to alleged Eighth Amendment violations to the ACA whenever it has relevant standards.”²¹²

²⁰⁶ *Id.* at *6, *8.

²⁰⁷ *Id.* at *8.

²⁰⁸ See *Gates v. Cook*, 376 F.3d 323, 337, 339–40 (5th Cir. 2004). Because *Russell* was consolidated with *Gates*, a pre-existing class action, after the plaintiff class in *Russell* was certified as a subclass of *Gates*, the case had a new party designation on appeal. See *id.* at 327–28.

²⁰⁹ See *id.* 337, 339–40. The court narrowed the scope of the injunctions from all of Unit 32 to only Unit 32-C, the section in which Russell and the other class members were confined. See *id.* at 339.

²¹⁰ *Id.* at 337 (5th Cir. 2004) (citing *Friends of the Earth, Inc. v. Laidlaw Env’tl. Servs., Inc.*, 528 U.S. 167, 190 (2002)).

²¹¹ *Id.*

²¹² *Id.*

The court also rejected the prison officials' argument that nobody on death row had ever suffered a serious heat-related illness, noting that the question was whether the conditions posed a substantial *risk* of harm to which MDOC officials had shown deliberate indifference, not whether death or serious illness had yet occurred.²¹³ The court cited expert testimony at trial "that it was 'very likely' that, under current conditions on Death Row, an inmate will die of heat stroke or some other heat-related illness."²¹⁴

After the Fifth Circuit issued its opinion, the legal team that represented Russell and his 64 fellow inmates on death row moved to extend the relief they had won to the rest of Unit 32, which housed around a thousand inmates.²¹⁵ The Unit 32 inmates' lawyers filed suit against Mississippi officials in June 2005.²¹⁶ This time the parties were able to sit down and negotiate terms of a consent decree, which the court approved in April 2006.²¹⁷ In contrast to the injunction in the death-row case, the consent decree's provisions on the issue of heat were tied only to the calendar, not to any specific heat index. From May through September of each year, prison officials were to ensure that each cell in Unit 32 was equipped with a fan, that each prisoner received a 32-ounce cup of ice three times daily, and that each prisoner was allowed to shower once a day, six days a week.²¹⁸

The final chapters of Unit 32's story end up not being primarily about the extreme heat conditions at the facility. A host of other problems had long bedeviled Unit 32 and MDOC eventually launched a series of deep reform initiatives to address the facility's many

²¹³ *Id.* at 339.

²¹⁴ *Id.*

²¹⁵ See Margaret Winter & Stephen F. Hanlon, *Parchman Farm Blues: Pushing for Prison Reforms at Mississippi State Penitentiary*, 35 LITIG. 6, 11–12 (2008), reprinted at [aclu.org/files/images/asset_upload_file829_41138.pdf](https://www.aclu.org/files/images/asset_upload_file829_41138.pdf). The trial court in the death-row case had originally found that "the heat problem extends to all of Unit 32 and possibly throughout Parchman." *Russell v. Johnson*, No. 1:02-cv-261, 2003 WL 22208029, *2 (N.D. Miss. May 21, 2003). The Fifth Circuit, however, had narrowed the scope of injunctive relief to only Unit 32-C, where the plaintiff class was housed. See *Gates*, 376 F.3d at 339–240.

²¹⁶ Complaint at 1, *Presley v. Epps*, No. 4:05-cv-148 (N.D. Miss. June 22, 2005).

²¹⁷ See Order on Joint Motion for Preliminary Approval of Proposed Consent Decree at 2–3, *Presley*, No. 4:05-cv-148 (N.D. Miss. Mar. 6, 2005); *Presley*, No. 4:05-cv-148 (N.D. Miss. Apr. 28, 2005) (order granting final approval of consent decree).

²¹⁸ See Notice of Proposed Class Action Settlement at 2–3, *Presley*, No. 4:05-cv-148 (N.D. Miss. Apr. 28, 2005).

problems.²¹⁹ Ultimately, despite the success of many of those reforms, MDOC chose to close Unit 32 altogether.²²⁰ Based on this planned shutdown, the parties agreed to dismiss the consent decree in June 2010.²²¹

The Unit 32 litigation has important lessons for correctional departments facing the prospect of constitutional claims based on excessive cell temperatures. Heat that poses a substantial risk of harm can be enough to prove unconstitutional conditions of confinement, even if no inmate has yet suffered that harm. Correctional officials' failure to take reasonable measures to relieve the heat can amount to deliberate indifference to those unconstitutional conditions if the risk is obvious. And budgetary constraints can never excuse constitutional violations or justify the failure to enact court-ordered reforms.

3.1.1.2 Example 2: Louisiana State Penitentiary in Angola, Death Row

In June 2013, three inmates on death row at the Louisiana State Penitentiary in Angola sued prison officials, alleging ongoing violations of their rights under the Eighth Amendment and

²¹⁹ See, e.g., John Buntin, *Mississippi's Corrections Reform*, GOVERNING (Aug. 2010), governing.com/topics/public-justice-safety/courts-corrections/mississippi-correction-reform.html; Margaret Winter & Stephen F. Hanlon, *Parchman Farm Blues: Pushing for Prison Reforms at Mississippi State Penitentiary*, 35 LITIG. 6, 13–14 (2008), reprinted at aclu.org/files/images/asset_upload_file829_41138.pdf.

²²⁰ The facilities to which the inmates of Unit 32 were relocated are not necessarily any better than Unit 32 from the standpoint of heat. Most inmate housing in Mississippi remains without air conditioning and, according to an MDOC spokesperson interviewed in 2013, Parchman stopped keeping temperature records in March 2012. See Emily Lane, *Miss. Prisoners on Death Row Lack Air Conditioning*, CLARION-LEDGER (Jackson, Miss.) (Aug. 22, 2013, 11:36 PM), archive.clarionledger.com/article/20130823/news/308200040/Miss-prisoners-death-row-lack-air-conditioning. Alan Bean, executive director of the civil rights organization Friends of Justice, visited the new death row in 2011 and met with an inmate who told him:

They closed down Unit 32 partly 'cause it was so hot; but we still have no air-conditioning and I believe it's hotter now than it used to be. The old building was made out of cinder block, so at least the temperature would drop at night. This new building is pretty much all metal, so it holds the heat all night long. I don't ever wear a shirt on the cell-block because anything you put on is instantly covered with sweat. I really feel sorry for the guards who have to work in here.

Alan Bean, *It's Still Hot as Hell on Parchman's Death Row*, FRIENDS OF JUSTICE (July 8, 2011), friendsofjustice.wordpress.com/2011/07/08/its-still-hot-as-hell-on-parchmans-death-row.

²²¹ See *Presley*, No. 4:05-cv-148 (N.D. Miss. Aug. 10, 2010) (order dismissing case without prejudice by agreement of parties).

discrimination on the basis of disability.²²² The plaintiffs, Elzie Ball, Nathaniel Code, and James Magee, alleged that the defendants were “subjecting them to excessive heat, acting with deliberate indifference to their health and safety, and discriminating against them on the basis of their disabilities.”²²³ They sought strictly injunctive relief, including a court order requiring defendants to take necessary measures to reduce and maintain the heat index on death row at or below 88°F.²²⁴ The district court ordered the independent collection of temperature, humidity, and heat-index data for the three-week period immediately before trial.²²⁵ After a bench trial, the district court found that the defendants had subjected the plaintiffs to cruel and unusual punishment but rejected their claims of discrimination based on disability.²²⁶

The court’s ruling and order contained extensive findings of fact.²²⁷ It began with a description of death row, which the judge had visited, noting that its eight housing tiers had no air conditioning or other mechanical system to lower temperatures or humidity, only louver windows and non-oscillating fans.²²⁸ Individual cells had exhaust vents but no windows or fans.²²⁹ Inmates spent all but one hour a day locked in their cells and were permitted daily showers.²³⁰ Each housing tier had an ice chest, all stocked from a single ice machine.²³¹ Inmates’ only direct access to ice was during their daily hour of “tier time,” when they were free to move about the tier outside their cells, though they could usually get ice during other daytime hours

²²² See *Ball v. LeBlanc*, 988 F. Supp. 2d 639, 642 (M.D. La. 2013).

²²³ *Id.*

²²⁴ *Id.* at 643. The US Justice Department filed a “statement of interest” shortly before trial in order “to assist the Court in determining what remedies would be necessary should the Court find that the Louisiana Department of Corrections violated the federal civil rights of prisoners in its custody.” Statement of Interest of the United States at 1–2, *Ball v. LeBlanc*, No. 13-368 (M.D. La. Aug. 2, 2013). The Justice Department made two points: that the district court would have broad authority to enter injunctive relief and that monitoring mechanisms would be essential to the success of any remedy. *Id.* at 4–8.

²²⁵ *Ball*, 988 F. Supp. 2d at 643–44.

²²⁶ *Id.* at 641. I discuss the court’s analysis of the plaintiffs’ discrimination claim separately in the section on disability-based statutory claims.

²²⁷ See *id.* at 647–61.

²²⁸ *Id.* at 647–49.

²²⁹ *Id.* at 648.

²³⁰ *Id.*

²³¹ *Id.*

from fellow inmates whose turn it was for tier time.²³² They had no access to ice at night, during lock-downs, or when supplies from the single ice machine ran out.²³³

The court noted that the plaintiffs, who ranged in age from 35 to 60, all suffered from hypertension and each had at least one other chronic condition or illness, such as diabetes, hepatitis, depression, high cholesterol, or obesity.²³⁴ All three took medications that made them more susceptible to heat-related illness.²³⁵ The court summarized the plaintiffs' trial testimony about how the heat affected them and what they did to cope. They described profuse sweating, swelling of joints and extremities, tingling sensations, dizziness, lightheadedness, disorientation, headaches, nausea, and difficulty breathing and sleeping.²³⁶ The plaintiffs' coping strategies included lying on the floor or "as still as possible," drinking water, and creating "cool towels" by wrapping them around ice.²³⁷

The court's opinion provided considerable detail about the data collected on the various housing tiers during the 21 days before the early-August trial.²³⁸ The heat index in all of the tiers exceeded 104°F at various times and the temperature, humidity, and heat index on the tiers all tended to be the same or higher—sometimes much higher—than outdoors.²³⁹ Protracted, unbroken periods of high heat indices were recorded.²⁴⁰ The data "unequivocally established that inmates housed in each of the death row tiers are consistently, and for long periods of time, subjected to high temperatures and heat indices in the NWS's 'caution,' 'extreme caution,' and 'danger' zones."²⁴¹

²³² *Id.* at 649.

²³³ *Id.*

²³⁴ *Id.* at 650–51.

²³⁵ *Id.* at 650–52.

²³⁶ *See id.*

²³⁷ *Id.*

²³⁸ *See id.* at 652–60.

²³⁹ *Id.* at 653, 659.

²⁴⁰ *See id.* at 652–59.

²⁴¹ *Id.* at 659. The National Weather Service's (NWS) heat-index chart, to which the court referred, shows specific combinations of temperature and humidity that give rise to various degrees of likelihood that prolonged exposure will result in heat disorder. They range from "caution" to "extreme caution" to "danger" to "extreme danger." The chart is available at *NWS Heat Index*, NAT'L WEATHER SERV., [nws.noaa.gov/om/heat/heat_index.shtml](https://www.nws.noaa.gov/om/heat/heat_index.shtml) (last visited Aug. 1, 2015).

Based on this evidence, as well as expert testimony at trial on risks that the heat and humidity on death row posed to the plaintiffs, along with public health information from multiple state and federal agencies, the court concluded that the conditions on death row constituted a substantial risk of serious harm to the plaintiffs.²⁴² Thus, the first of the two elements of a successful claim of cruel and unusual punishment was established.²⁴³

Turning to the second element of the Eighth Amendment claim, the court found sufficient evidence that the defendants had acted with deliberate indifference to the substantial risk of harm that the extreme heat conditions posed. The court concluded that the defendants' knowledge of the risk could be inferred from its obviousness as well as from circumstantial evidence presented at trial.²⁴⁴ Citing the warden's own testimony that he took no actions to reduce the heat conditions, the court further concluded that the defendants had disregarded the risks to the plaintiffs.²⁴⁵ Accordingly, the court concluded that the conditions of confinement in which the plaintiffs were held violated the Eighth Amendment.²⁴⁶

After denying the plaintiffs' disability claims, the district court turned to the question of relief. Reasoning that the defendants might move the plaintiffs to a different cell or tier at any time, the court concluded that a remedy would have to address heat conditions throughout death row and that facility-wide remedial measures would not be overly broad.²⁴⁷ The court ordered prison officials to come up with a plan to reduce the heat index on all death row tiers, to keep it at or below 88°F each year from April 1 through October 31, and to closely monitor and record temperature, humidity, and heat index during that seven-month timeframe.²⁴⁸ Death row inmates at risk of developing heat-related illnesses were also to receive at least one cold

²⁴² *Ball*, 988 F. Supp. 2d at 672.

²⁴³ As discussed previously, conditions of confinement are unconstitutional if (1) they present a "substantial risk of harm" to an inmate's health and (2) correctional officials acted with "deliberate indifference" to that risk. *Farmer v. Brennan*, 511 U.S. 825, 829, 834 (1994).

²⁴⁴ *Ball*, 988 F. Supp. 2d at 672–73 (M.D. La. 2013) (citing *Gates v. Cook*, 376 F.3d 323, 332 (5th Cir. 2004)). The plaintiffs had introduced evidence of complaints they had lodged about the heat and testimony revealed that prison officials closely monitored and logged temperatures on death row and regularly walked the tiers. *Id.* at 676.

²⁴⁵ *Id.* at 676.

²⁴⁶ *Id.* at 684.

²⁴⁷ *Id.* at 688–89.

²⁴⁸ *Id.* at 689.

shower daily, as well as 24-hour direct access to clean and uncontaminated ice, cold drinking water, or both.²⁴⁹ The court admonished the defendants that “financial considerations will *not* be considered a legitimate reason” for noncompliance with its order.²⁵⁰ Finally, it awarded reasonable attorneys’ fees and costs to the plaintiffs.²⁵¹

On appeal, in July 2015, the Fifth Circuit unanimously affirmed both the finding of constitutional violations and the dismissal of the plaintiffs’ disability claims.²⁵² However, a majority held that while injunctive relief was appropriate, the relief ordered by the trial court went beyond the bounds set by the Prison Litigation Reform Act of 1995 (PLRA), which significantly limits trial courts’ discretion to fashion injunctive relief to remedy violations of inmates’ federal rights.²⁵³

Under the PLRA, an injunction to cure unconstitutional conditions of confinement must “extend no further than necessary to correct the violation of the Federal right of a particular plaintiff or plaintiffs,” must be “narrowly drawn,” and must be “the least intrusive means necessary to correct the violation.”²⁵⁴ The majority held that both the type of relief and the scope of relief exceeded these constraints.²⁵⁵

In the majority’s view, “the district court ordered a type of relief—air conditioning—that is unnecessary to correct the Eighth Amendment violation.”²⁵⁶ Yet, as the dissenting judge noted, the injunction “in principal only orders the heat index in the Angola death row tiers to be maintained below 88 degrees.”²⁵⁷ Indeed, aside from setting a maximum heat index, the

²⁴⁹ *Id.*

²⁵⁰ *Id.* The court also announced that it would retain jurisdiction and appoint a special master to oversee implementation of the defendants’ plan, at state expense. *Id.*

²⁵¹ *Id.* at 690 (citing 42 U.S.C. § 1988).

²⁵² *Ball v. LeBlanc*, No. 14-30067, slip op. at 14 (5th Cir. July 8, 2015), ca5.uscourts.gov/opinions/pub/14/14-30067-CV0.pdf. The court’s discussion of the disability claims is discussed below in the section on such statutory claims.

²⁵³ *Id.* at 18–19.

²⁵⁴ 18 U.S.C. § 3626(a)(1)(A) (2015). The act also requires district courts to “give substantial weight to any adverse impact on public safety or the operation of a criminal justice system caused by the relief.” *Id.* For an overview of other ways in which the 1995 law made litigation more difficult for inmates, see, *e.g.*, Margo Schlanger, *Inmate Litigation*, 116 HARV. L. REV. 1555, 1627–64 (2003).

²⁵⁵ *Ball*, slip op. at 19, 21.

²⁵⁶ *Id.* at 19.

²⁵⁷ *Id.* at 23 (Reavley, J., dissenting).

injunction did not prescribe any particular method of staying below that ceiling.²⁵⁸ It did not mention air conditioning.²⁵⁹

The majority also faulted the district court for determining that a facility-wide remedy was necessary to provide effective relief to the three plaintiffs.²⁶⁰ On this score, the majority was on firmer footing, since the case was not a class action and targeted measures could have reduced the risk that heat posed to the three plaintiffs without affecting other inmates.

The Fifth Circuit vacated the injunction and remanded the case to the district court with instructions to produce a new injunction.²⁶¹ It directed the district court to limit its order to measures similar to those affirmed in the 2004 *Gates* decision and to target relief only to the three plaintiffs:

[T]he Defendants could divert cool air from the guards' pod into the tiers; allow inmates to access air conditioned areas during their tier time; allow access to cool showers at least once a day; provide ample supply of cold drinking water and ice at all times; supply personal ice containers and individual fans; and install additional ice machines. . . . Plaintiffs could be placed in cells next to the officers' pod, which are cooler than those farther down the tiers. Louisiana could also air condition one of the four [death row] tiers for the benefit of prisoners susceptible to heat-related illness. When coupled with an order not to move the Plaintiffs

²⁵⁸ See *Ball v. LeBlanc*, 988 F. Supp. 2d 639, 689 (M.D. La. 2013) (“Defendants’ plan shall include a step-by-step description as to how Defendants will: (1) immediately lower and maintain the heat index in the Angola death row tiers at or below 88 degrees Fahrenheit; (2) maintain the heat index in the Angola death row tiers at or below 88 degrees Fahrenheit *from April 1 through October 31*; (3) monitor, record, and report the temperature, humidity, and heat index in each of the death row tiers every two hours on a daily basis *from April 1 through October 31*; (4) provide Plaintiffs, and other death row inmates who are at risk of developing heat-related illnesses, with (a) at least one cold shower per day; (b) direct access to clean, uncontaminated ice and/or cold drinking water during their “tier time” *and* the twenty-three hours in which the inmates are confined to their cell; and (c) any and all relief that it is necessary to comply with this Court’s order and the prevailing constitutional standards.”).

²⁵⁹ See *id.* at 689–91.

²⁶⁰ *Ball*, slip op. at 21 (majority opinion).

²⁶¹ *Id.* at 22.

from these cells unless certain conditions are met, these options could adequately remedy the Plaintiffs' constitutional violation.²⁶²

As of this writing, in August 2015, *Ball* remains on remand in the district court and the question of relief is still unresolved. But the Fifth Circuit's affirmance of the verdict on the plaintiffs' constitutional claims reinforces the lessons from the Unit 32 litigation about what evidence can suffice to prove constitutional violations based on extreme heat. Even more than the Mississippi litigation, *Ball* shows the persuasive power of quantitative evidence of temperature, humidity, and heat index.

Ball is also important because of the actions it sparked on the part of third parties. Amicus briefs supporting the plaintiffs at the appellate stage were filed by the US Department of Justice,²⁶³ AFSCME Local 3807 (Texas Correctional Employees),²⁶⁴ the Louisiana Advocacy Center and Disability Rights Texas,²⁶⁵ and Families of Deceased Texas Prisoners.²⁶⁶ The Justice Department's amicus brief, along with the statement of interest it submitted at the trial level,²⁶⁷ signal its concern with high prison temperatures and its willingness to become involved in efforts to force correctional departments to provide adequate cooling. The amicus brief from Texas Correctional Employees shows a rare congruence of interests between inmates and correctional officers when prison temperatures are concerned, hinting at the possibility of future cooperation in efforts to compel correctional departments to take extreme heat seriously.²⁶⁸

²⁶² *Id.* at 19–21.

²⁶³ Brief for the United States as Amicus Curiae Supporting Plaintiffs-Appellees/Cross-Appellants and Urging Affirmance in Part, *Ball*, No. 14–30067 (5th Cir. Sept. 30, 2014).

²⁶⁴ Amicus Brief of American Federation of State County Municipal Employees Local 3807 (Texas Correctional Employees) in Support of Plaintiffs-Appellees in Favor of Affirmance, *Ball*, No. 14–30067 (5th Cir. Sept. 30, 2014).

²⁶⁵ Brief on Behalf of Amici Curiae Advocacy Center (La.) and Disability Rights Texas, in Support of Plaintiffs' Cross Appeal (with Consent of the Parties), *Ball*, No. 14–30067 (5th Cir. Sept. 30, 2014). The Advocacy Center and Disability Rights Texas are the agencies designated by the governors of Louisiana and Texas, respectively, to protect and advocate for the rights of individuals with disabilities in their states, pursuant to federal statutes. *Id.* at 1.

²⁶⁶ Brief for Amicus Curiae Families of Deceased Texas Prisoners (Filed in Support of Appellees Elzie Ball, Nathaniel Code, and James Magee, and Urging Affirmation), *Ball*, No. 14–30067 (5th Cir. Sept. 30, 2014).

²⁶⁷ Statement of Interest of the United States, *Ball v. LeBlanc*, No. 13–368 (M.D. La. Aug. 2, 2013).

²⁶⁸ In 2013, the president of the Texas union had declared support for survivors of deceased Texas inmates in civil suits alleging that their deaths were caused by exposure to extreme heat while in custody:

With the issue of relief up in the air, it is harder to assess the significance of *Ball* for future litigation around remedies. The Fifth Circuit majority's strained reading of the injunction suggests an active effort to avoid leaving any basis for future arguments that air conditioning is legally required to remedy unconstitutionally high temperatures in inmate housing.²⁶⁹ Because a remedial measure must be calibrated to the risk it is meant to mitigate, however, there is no sound basis for categorically eliminating any specific approach, particularly if it is the most practical way of reducing that risk. Furthermore, "[i]f air conditioning is the only means of avoiding that risk, that is a function of defendants' decision to build the facility as they did."²⁷⁰

It is also striking how differently the district court and appellate court conceptualized appropriate relief. The district court set an objective goal for the state defendants to meet—keeping the heat index from exceeding 88°F—while allowing the defendants to propose a means of achieving that goal. In contrast, the Fifth Circuit singled out various acceptable measures, such as increasing access to showers and ice, without defining the end that those means were meant to achieve except to reduce risk “to a socially acceptable level.”²⁷¹ As the Fifth Circuit did not reject the approach of setting a goal while allowing flexibility in how that goal is achieved, the district court may once again take that approach, while eliminating the requirement for a facility-wide remedy.

“Several inmates’ families have filed wrongful-death lawsuits, and the officers’ union supports them.” Lance Lowry, Opinion, *In Texas, Inmates and Officers Swelter*, N.Y. TIMES, Nov. 22, 2013, at A29, nytimes.com/2013/11/22/opinion/in-texas-inmates-and-officers-swelter.html.

²⁶⁹ The majority went out of its way to categorically reject air conditioning as a remedy: “Even assuming that air conditioning is an acceptable remedy here—and it is not—it is possible to provide air conditioning solely to these three inmates.” *Ball v. LeBlanc*, No. 14-30067, slip op. at 21 (5th Cir. July 8, 2015) (emphasis added).

²⁷⁰ *Jones’El v. Berge*, No. 00-C-421-C, 2003 WL 23109724, *1 (D. Wis. Nov. 26, 2003) (“Defendants constructed a facility in which inmates are subjected to temperatures that can pose a serious risk to their well-being, particularly if they are taking medications or have health conditions that prevent their bodies from adjusting to high heat. If air conditioning is the only means of avoiding that risk, that is a function of defendants’ decision to build the facility as they did. Leaving inmates vulnerable to serious health consequences or death is not a reasonable alternative.”)

²⁷¹ *Ball*, slip op. at 19.

3.1.2 Claims Under the Americans with Disabilities Act and the Rehabilitation Act

In addition to the constitutional claims available to all inmates, disabled inmates may be able to bring successful claims under Title II of the Americans with Disabilities Act of 1990 (ADA)²⁷² and Section 504 of the Rehabilitation Act of 1973 (RA)²⁷³ against correctional departments that fail to protect them from adverse health consequences of heat. Title II, which “unmistakably includes State prisons and prisoners within its coverage,”²⁷⁴ protects individuals who would otherwise be qualified for the benefits of public services, programs, or activities against being excluded from or denied those benefits or discriminated against because of a disability.²⁷⁵ Title II of the ADA is an expansion of Section 504 of the RA, which similarly protects individuals who would otherwise be qualified for the benefits of services, programs, or activities that receive federal funding against being excluded from or denied those benefits or discriminated against because of a disability.²⁷⁶ The remedies, procedures, and rights under the two statutes are the same.²⁷⁷

Viable heat-related claims under Title II and Section 504 may arise where inmates need reasonable accommodations to enable them to withstand heat that inmates who are not disabled can tolerate. In *Hinojosa v. Livingston*, the mother of a former inmate who died while incarcerated in Texas claimed that the failure to make reasonable accommodations for her son’s disabilities, in violation of Title II and Section 504, resulted in his death from hyperthermia.²⁷⁸ She argued that the combination of her son’s various medical conditions and the drugs used to treat them “made him more vulnerable to suffer adverse consequences as a result of the extreme

²⁷² 42 U.S.C. §§ 12131–12134 (2014).

²⁷³ 29 U.S.C. §§ 794–794a (2014).

²⁷⁴ Pa. Dep’t of Corr. v. Yeskey, 524 U.S. 206, 209 (1998). While *Yeskey* only explicitly addressed Title II, its holding is applied to Section 504 as well. See, e.g., Key v. Grayson, 179 F.3d 996, 997 (6th Cir. 1999) (“it is now established that the ADA and the Rehabilitation Act apply to prisoners”) (citing *Yeskey*); McIntyre v. Robinson, 126 F. Supp. 2d 394, 407–8 (D. Md. 2000) (“There is no longer any question after . . . *Yeskey* . . . that Title II of the ADA and by extension the Rehabilitation Act apply to inmates or prisons.”).

²⁷⁵ 42 U.S.C. § 12132 (2014).

²⁷⁶ 29 U.S.C. § 794(a) (2014).

²⁷⁷ 42 U.S.C. § 12133 (2014).

²⁷⁸ 994 F. Supp. 2d 840, 841–42 (S.D. Tex. 2014). The specific disabilities were hypertension, diabetes, depression, schizophrenia, and obesity. *Id.* at 842. As of this writing, the *Hinojosa* case is in active litigation.

heat that the inmates at the Garza West Unit must endure.”²⁷⁹ The state defendants moved to dismiss the suit, arguing that the plaintiff failed to allege any facts that would demonstrate discrimination.²⁸⁰

Denying the motion to dismiss, the *Hinojosa* court began by noting that a “failure to make reasonable accommodations to the needs of a disabled prisoner may have the effect of discriminating against that prisoner because the lack of an accommodation may cause the disabled prisoner to suffer more pain and punishment than non-disabled prisoners.”²⁸¹ The court rejected the argument that the deceased inmate’s living and housing conditions were shared by all his fellow prisoners, noting that “Plaintiff has alleged sufficient facts to state that those conditions were more onerous on the decedent due to his particular disabilities.”²⁸² The court also stressed that it was not incumbent on the disabled inmate to request particular accommodations when prison officials took no action despite knowing of his disabilities and needs.²⁸³

The plaintiffs in *Ball v. LeBlanc*, discussed at length above, brought Title II and Section 504 claims along with their Eighth Amendment claims.²⁸⁴ Unlike in *Hinojosa*, however, the *Ball* court found that they had not shown that they were “disabled,” as that term is defined by the ADA and the RA, a threshold showing for their statutory claims.²⁸⁵ Both statutes define a “disability” as “a physical or mental impairment that substantially limits one or more major life activities” of an individual.²⁸⁶ The court found that the evidence did establish that the plaintiffs each suffered from several chronic diseases.²⁸⁷ However, it continued, “[w]hile the Court has no doubt that such diseases may limit one or more of Plaintiffs’ major life activities, the record is

²⁷⁹ *Id.* at 842.

²⁸⁰ *Id.*

²⁸¹ *Id.* at 843 (quoting *McCoy v. Tex. Dep’t of Criminal Justice*, 2006 WL 2331055, *7 (S.D. Tex. Aug. 9, 2006)).

²⁸² *Id.*

²⁸³ *See id.* at 843–44.

²⁸⁴ *See Ball v. LeBlanc*, 988 F. Supp. 2d 639, 684 (M.D. La. 2013).

²⁸⁵ *Id.* at 687. The court’s analysis ended at that threshold issue and did not reach the substance of their arguments about discrimination.

²⁸⁶ 42 U.S.C. § 12102(1)(A) (2014); 29 U.S.C. § 705(9)(B) (incorporating definition in 42 U.S.C. § 12102(1)(A)).

²⁸⁷ *Ball*, 988 F. Supp. 2d at 686–87.

void of any *evidence* to support such a conclusion.”²⁸⁸ The district court therefore dismissed their disability-based claims.²⁸⁹

On appeal, the plaintiffs argued that the district court had applied the wrong standard by citing cases and regulations that had been abrogated and superseded by the ADA Amendments Act of 2008.²⁹⁰ The Civil Rights Division of the US Department of Justice made the same basic argument in an amicus brief.²⁹¹ Both the plaintiffs and the Justice Department argued that thermoregulation—the regulation of internal body temperature—is a “major life activity” under current law and that, accordingly, individuals whose capacity for proper thermoregulation is compromised, for whatever reason, are disabled for purposes of Title II and Section 504.²⁹²

The Fifth Circuit agreed that the district court had erroneously applied a superseded and excessively restrictive definition of disability but concluded that the error was harmless.²⁹³ As it had done on a prior occasion, the Fifth Circuit assumed for the sake of argument that thermoregulation is a major life activity for purposes of the ADA but explicitly left the question undecided.²⁹⁴ But it found “no *evidence* that these prisoners’ thermoregulatory systems are actually impaired.”²⁹⁵ It therefore affirmed the district court’s dismissal of their disability claims.²⁹⁶

Hinojosa and *Ball* both show that inmates with disabilities that increase their susceptibility to harm from extreme heat may have viable claims under the ADA and the RA. *Hinojosa* teaches the important lesson that correctional departments have an affirmative responsibility to determine whether disabled inmates need reasonable accommodations to protect them from the

²⁸⁸ *Id.* at 687.

²⁸⁹ *Id.*

²⁹⁰ See Appellees’ Principal and Response Brief at 50–52, *Ball v. LeBlanc*, No. 14-30067 (5th Cir. Sept. 23, 2014).

²⁹¹ See Brief for the United States as Amicus Curiae Supporting Plaintiffs-Appellees/Cross-Appellants and Urging Affirmance in Part at 24–31, *Ball*, No. 14-30067 (5th Cir. Sept. 30, 2014).

²⁹² See Appellees’ Principal and Response Brief at 56–57, *Ball*, No. 14-30067; Brief for the United States as Amicus Curiae at 24, 30, *Ball*, No. 14-30067.

²⁹³ *Ball v. LeBlanc*, No. 14-30067, slip op. at 14 (5th Cir. July 8, 2015).

²⁹⁴ *Id.* at 16 & n.11. In *EEOC v. Agro Distribution, LLC*, 555 F.3d 462 (5th Cir. 2009), the court “assume[d], without deciding, that the regulation of body temperature constitutes a major life activity under the ADA.” *Id.* at 469 n.8.

²⁹⁵ *Ball*, slip op. at 16.

²⁹⁶ *Id.* at 17.

heat and that they cannot wait for those inmates to demand such accommodations. *Ball* makes clear the importance of introducing evidence to show that plaintiffs are indeed disabled.

Although the *Ball* plaintiffs were ultimately unsuccessful on their disability claims, the case has brought the problem of extreme cell temperatures to the attention of mainstream disability advocates. As previously noted, the Advocacy Center and Disability Rights Texas submitted an amicus brief to the Fifth Circuit supporting the *Ball* plaintiffs. Those are the agencies designated by the governors of Louisiana and Texas, respectively, to protect and advocate for the rights of individuals with disabilities in their states. The Justice Department's amicus brief demonstrates its concern with the issue as well.

As the Fifth Circuit noted in *Ball*, “no court has held that thermoregulation is a major bodily function [under the current statutory definition of disability], nor do EEOC regulations list thermoregulation as a major bodily function.”²⁹⁷ That may change as temperatures continue to rise, driving an increase in inmate litigation and bringing additional attention from disability advocates.

3.2 The Civil Rights of Institutionalized Persons Act

The Civil Rights of Institutionalized Persons Act of 1980 (CRIPA)²⁹⁸ empowers the US Department of Justice (DOJ) to investigate correctional facilities and certain other institutions where people are held in state or local custody in order to determine whether conditions there violate the Constitution.²⁹⁹ Where DOJ finds a pattern and practice of civil rights violations and has reasonable cause to believe that state or local authorities are subjecting inmates to conditions that violate their constitutional rights, it can initiate litigation to remedy those violations.³⁰⁰ First, however, it must attempt to work with and assist the authorities in correcting unconstitutional conditions without the need for litigation.³⁰¹ In situations where DOJ finds a

²⁹⁷ *Ball v. LeBlanc*, No. 14-30067, slip op. 16 n.11 (5th Cir. July 8, 2015) (citing 29 C.F.R. § 1630.2(i)(1)(ii)).

²⁹⁸ 42 U.S.C. §§ 1997–1997j (2014).

²⁹⁹ See §§ 1997a(a), 1997a-1. CRIPA's definition of “institution” also encompasses places such as skilled-nursing facilities, juvenile-justice facilities, and institutions for the mentally ill, among others. See § 1997(1).

³⁰⁰ See § 1997a(a).

³⁰¹ See § 1997b(2).

pattern and practice of civil rights violations and unconstitutional conditions of confinement, and where an inmate has already commenced litigation, it may intervene in that litigation upon motion.³⁰² DOJ may seek whatever equitable relief is appropriate to remedy unconstitutional conditions of confinement.³⁰³

To date, DOJ has not used its authority under CRIPA to investigate heat conditions in correctional facilities. However, the fact that it filed an amicus brief supporting the plaintiffs in *Ball v. LeBlanc*, as discussed above, demonstrates that DOJ has taken an interest in extreme heat conditions. It remains to be seen how much that interest will translate into active enforcement efforts under CRIPA. But as temperatures rise with climate change, there is a distinct possibility that DOJ will decide to prioritize eliminating unconstitutional conditions of confinement due to heat.

3.3 Legal Action by Correctional Officers

“Heat sees no difference in an inmate or an officer. It does not choose its victims based on their moral character, their criminal history, or their uniform.”³⁰⁴ This striking statement appears in an amicus brief that the Texas Correctional Officers Union filed in support of the inmate plaintiffs in *Ball v. LeBlanc*. The very existence of the brief is remarkable; it is not every day that correctional officers (COs) side with inmates in disputes with correctional departments. Yet the union’s move makes strategic sense. Perhaps ironically, COs enjoy significantly less legal protection than inmates do against being forced to endure heat conditions that threaten their health. From a legal standpoint, COs are simply state employees like any other. Their employers owe them no special duty of care beyond those owed to all employees. Thus, their best option for getting dangerous heat in their workplaces remedied may be to hitch their wagons to those of inmates who assert constitutional claims and win injunctive remedies.

³⁰² See § 1997c(a)(1).

³⁰³ See § 1997a(a).

³⁰⁴ Amicus Brief of American Federation of State County Municipal Employees Local 3807 (Texas Correctional Employees) in Support of Plaintiffs-Appellees in Favor of Affirmance at 1, *Ball v. LeBlanc*, No. 14-30067 (5th Cir. Sept. 30, 2014).

In its 2014 amicus brief, the Texas Correctional Officers Union described a number of recent reports it had received from officers who were harmed by having to work under extreme heat conditions at various Texas prisons.³⁰⁵ One officer reported receiving medical advice that regularly working in temperatures above 90°F was causing complications to his diabetes.³⁰⁶ Another complained about almost passing out from the heat at a time when no fans were working.³⁰⁷ An officer with hypertension complained of summertime temperatures regularly exceeding 100°F in the building where he works.³⁰⁸ Another report documented several officers' suffering heat exhaustion and passing out.³⁰⁹ On four occasions, one officer had to be sent to the hospital by emergency medical personnel because of heat-related complications to a blood-pressure condition, while another reported suffering from heat exhaustion "at least three or four times."³¹⁰

Although the Texas Correctional Officers Union has attracted national media attention through its advocacy around working conditions,³¹¹ Texas is not the only state in which extreme heat has affected COs' health.³¹² Wherever correctional facilities lack sufficient cooling capacity, the health of inmates and COs alike is in jeopardy.

³⁰⁵ See *id.* at 4–5. Two of these reports noted that the excessive heat also presented security concerns. One "described how excessive heat continually fogs up the officer's eyewear resulting in decreased 'visibility and reaction time to emergencies,'" while the other, filed by an officer who had suffered from heat exhaustion on multiple occasions, "lament[ed] the security risk in the event [that] the symptoms of heat exhaustion arise when the officer is tending to offenders out of their cells." *Id.* at 5.

³⁰⁶ *Id.* at 4.

³⁰⁷ *Id.*

³⁰⁸ *Id.*

³⁰⁹ *Id.*

³¹⁰ *Id.* at 5.

³¹¹ See, e.g., Lance Lowry, Opinion, *In Texas, Inmates and Officers Swelter*, N.Y. TIMES, Nov. 22, 2013, at A29, nytimes.com/2013/11/22/opinion/in-texas-inmates-and-officers-swelter.html (describing workplace conditions; "Last year, 92 state correctional officers reported heat-related illnesses as a result of working in prisons lacking climate control").

³¹² See, e.g., Editorial, *Hot Front: Prison Conditions at a Boiling Point*, DAILY OKLAHOMAN, July 9, 2010, newsok.com/hot-front-prison-conditions-reach-a-boiling-point/article/3474535 (warning that summer heat and humidity take physical and emotional toll on Oklahoma COs); Laurie Willis, *Union Criticizes Conditions at Jail: Several Workers Fell Ill After Air Conditioner Broke*, BALTIMORE SUN, May 14, 2004, at 3B, articles.baltimoresun.com/2004-05-14/news/0405140164_1_air-conditioning-conditioner-correctional-officers (reporting that COs suffered heatstroke and had to be hospitalized when air conditioning at Baltimore's Central Booking and Intake Center failed during heat wave).

For individual COs who experience heat-related illnesses or injuries on the job, workers' compensation statutes provide coverage for medical expenses and lost income, as well as compensation for disability or death.³¹³ Workers' compensation claims are generally the exclusive legal remedy for workplace injuries.³¹⁴

Workers' compensation can address the specific injuries that an individual CO suffers due to extreme heat. It is not, however, an effective vehicle for COs to demand improvements in working conditions that would prevent heat-related illness from occurring in the first place. For such efforts, COs may turn to the Occupational Safety and Health Act of 1970 (OSH Act).³¹⁵

The OSH Act requires employers to provide their employees with a workplace that is free of recognized hazards that may cause death or serious physical harm.³¹⁶ Standards set by the federal Occupational Safety and Health Administration (OSHA) do not directly apply to state or local public employees but half the states have OSHA-approved state plans that afford them at least the same protections.³¹⁷ Public employees in those states, including COs, have the right to request an OSHA inspection of their workplace, the right to information and training about hazards and harm prevention, the right to copies of the results of tests conducted to identify workplace hazards, the right to review records of work-related accidents and injuries, and protection against retaliation or discrimination for exercising these and other rights.³¹⁸

Since states with OSHA-approved state plans must adopt workplace standards that are "at least as effective as" federal OSHA standards, they often simply adopt the wording of federal

³¹³ Every state has its own workers' compensation statutes, as does the federal government.

³¹⁴ 82 AM. JUR. 2D *Workers' Compensation* § 54 (2015).

³¹⁵ 29 U.S.C. ch. 15 (2014).

³¹⁶ 29 U.S.C. § 654(a)(1) (2014).

³¹⁷ See 29 U.S.C. § 667(a)–(c) (2014). State and local workers in Alaska, Arizona, California, Connecticut, Hawai'i, Illinois, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Nevada, New Jersey, New Mexico, New York, North Carolina, Oregon, South Carolina, Tennessee, Utah, Vermont, Virginia, Washington, and Wyoming, as well as Puerto Rico and the US Virgin Islands, are protected by OSHA-approved state plans. *State Plans*, OSHA, [osha.gov/dcsp/osp/index.html](https://www.osha.gov/dcsp/osp/index.html) (last visited Aug. 1, 2015).

³¹⁸ *Id.*

standards as their own.³¹⁹ Federal OSHA has not yet set any specific standards for indoor workplace heat and so far Minnesota is the only state to do so as part of its state plan.³²⁰

Minnesota's OSHA rules set "two-hour time-weighted average permissible heat exposure limits" for "employee exposure to indoor environmental heat conditions," calibrated to the intensity of the work performed.³²¹ Employees must not be exposed to heat in excess of 77°F for heavy work, 80°F for moderate work, or 86°F for light work.³²² The rule also requires that workers exposed to heat receive training to understand the risks associated with workplace heat, permissible exposure levels, and appropriate emergency treatment measures.³²³

The lack of specific standards for workplace heat set by OSHA—and, by extension, under state plans that simply use federal standards—does not leave workers unprotected. Such hazards fall under the General Duty Clause of the OSH Act, which provides that "[e]ach employer . . . shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees."³²⁴ In 2012 and 2013, twenty cases of heat illness or death were brought for federal enforcement under the General Duty Clause.³²⁵

³¹⁹ OSH Act § 18(c)(2), 29 U.S.C. § 667(c)(2) (2014); *State Plans*, OSHA, [osha.gov/dcsp/osp/index.html](https://www.osha.gov/dcsp/osp/index.html) (last visited Aug. 1, 2015).

³²⁰ California and Washington have adopted specific standards for workplace heat but they only apply to outdoor workplaces. See Heat Illness Prevention in Outdoor Places of Employment, CAL. CODE REGS. tit. 8, § 3395 (2015); Outdoor Heat Exposure, WASH. ADMIN. CODE § 296-62-095 to -09560 (2015).

³²¹ Indoor Ventilation and Temperature in Places of Employment, MINN. R. 5205.0110, subpt. 2(B) (2015).

³²² *Id.* at subpt. 2(B) tbl.1 (2015). The rule defines the three levels of work. "'Heavy work' means 350 or higher kcal/hr (kilocalories per hour), for example: heavy lifting and pushing, shovel work"; "'Moderate work' means 200 to 350 kcal/hr, for example: walking with moderate lifting and pushing"; and "'Light work' means up to 200 kcal/hr, for example: sitting or standing performing light hand or arm work." *Id.* at subpt. 2(A)(4)–(6) (2015). Most work by COs would likely fall into the light or moderate categories.

³²³ *Id.* at subpt. 2(C); 5206.0700, subpts. 1 & 3 (2015).

³²⁴ OSH Act § 5(a)(1), 29 U.S.C. § 654(a)(1) (2014). See also *Occupational Heat Exposure*, OSHA, [osha.gov/SLTC/heatstress/standards.html](https://www.osha.gov/SLTC/heatstress/standards.html) (last visited Aug. 1, 2015) ("This includes heat-related hazards that are likely to cause death or serious bodily harm."). For a representative decision of the Occupational Safety and Health Review Commission in which a serious violation was upheld against an employer under the General Clause after an employee died from workplace exposure to heat, see *Secretary of Labor v. Post Buckley Schuh & Jernigan, Inc.*, No. 10-2387 (OSHRC Mar. 15, 2012) (ALJ), [oshrc.gov/decisions/pdf_2012/10-2587.pdf](https://www.oshrc.gov/decisions/pdf_2012/10-2587.pdf).

³²⁵ Sheila Arbury et al., *Heat Illness and Death Among Workers: United States, 2012–2013*, 63 MORBIDITY & MORTALITY WKLY. REP. 661 (2014), [cdc.gov/mmwr/pdf/wk/mm6331.pdf](https://www.cdc.gov/mmwr/pdf/wk/mm6331.pdf).

Although OSHA has not yet set standards for workplace heat exposure, heat is clearly a matter of active concern for the agency.³²⁶ OSHA has launched a “Campaign to Prevent Heat Illness in Outdoor Workers,” has a webpage devoted to occupational heat exposure, has produced an employer’s guide to using the heat index, and has developed an application for mobile devices that allows workers to calculate the heat index in their workplace and instructs them in appropriate safety precautions.³²⁷ As climate change progresses and heat becomes a more significant workplace hazard, OSHA may well define standards that would protect COs in jurisdictions with OSHA-approved state plans.

The workers’ compensation and OSHA statutory schemes apply to workers generally. For workers with disabilities who sustain injury or are at greater risk of injury because of their disabilities, the Americans with Disabilities Act of 1990 (ADA) provides additional legal options.

Title I of the ADA prohibits discrimination in employment against qualified individuals with disabilities.³²⁸ Refusal to make reasonable accommodations that a qualified individual needs in order to perform the essential functions of the job is a form of prohibited discrimination.³²⁹ Therefore, COs with disabilities that place them at greater risk of heat-related injury are entitled to reasonable accommodations to mitigate that greater risk and allow them to fulfill their essential job functions. Whether such accommodations could be made, or whether

³²⁶ A 2012 article in *Professional Safety*, the journal of the American Society of Safety Engineers, states that “[t]he likelihood of OSHA enforcement in this area is very high.” Mark A. Lies II & Meagan Newman, *OSHA Campaign to Protect Employees from Heat Hazards: Multiple Legal Liabilities*, PROF. SAFETY EXTRA, July 2012, at 2, asse.org/assets/1/7/PSEExtra_Lies-Newman_0712.pdf. Discussing OSHA’s Campaign to Prevent Heat Illness in Outdoor Workers, the authors advise that “OSHA can be expected to enforce this agenda across the entire spectrum of industries where heat is a factor in the workplace. For those employers who do not have employees working outside, the same potential liabilities exist for operations within a facility where there are inadequate HVAC resources.” *Id.* at 1.

³²⁷ See OSHA’s Campaign to Prevent Heat Illness in Outdoor Workers, OSHA, osha.gov/SLTC/heatillness/index.html (last visited Aug. 1, 2015); Occupational Heat Exposure, OSHA, osha.gov/SLTC/heatstress/index.html (last visited Aug. 1, 2015); Using the Heat Index: A Guide for Employers, OSHA, osha.gov/SLTC/heatillness/heat_index/pdfs/about.pdf (last visited Aug. 1, 2015); Heat Safety Tool, OSHA, osha.gov/SLTC/heatillness/heat_index/heat_app.html (last visited Aug. 1, 2015).

³²⁸ See 42 U.S.C. § 12112(a) (2015). The ADA defines a “qualified individual” is one who, “with or without reasonable accommodation, can perform the essential functions of the employment position that such individual holds or desires.” § 12111(8).

³²⁹ See § 12112(b)(5).

they would be considered “reasonable,” are largely matters of conjecture at this point since the issue has not yet arisen.

Labor law provides a final legal tool that COs may employ in pushing for mitigation of dangerous workplace heat. Working conditions are a classic labor concern and a frequent topic of collective bargaining. In jurisdictions where heat in the workplace jeopardizes COs’ health, the issue may make its way into contract negotiations or become the focus of labor actions. As the CO union’s amicus brief in *Ball* illustrates, dangerously hot working conditions are already of concern to organized labor in the correctional sector.

All of these options presume that COs who suffer from excessive heat in the workplace will try to find ways to improve their working conditions. But it is equally likely that worsening prison temperatures will simply drive some COs to seek less risky employment. States that cannot maintain healthy interior temperatures in their correctional facilities may face increasing problems with workforce retention as climatic conditions become more difficult.³³⁰

3.4 Policies and Regulations Concerning Heat and Climate Control in Corrections

Constitutional requirements for humane conditions of confinement and worker health protections are not the only standards that correctional departments must meet in order to ensure the wellbeing of inmates and correctional officers in the context of high temperatures. Many departments must also comply with policies and regulations. Those policies and regulations vary considerably but many share common features. This section presents a brief survey of some common requirements. The Appendix provides specific policy and regulatory language from most jurisdictions.

³³⁰ “In a recent report to the Texas Legislature, work conditions including extreme heat were cited as the second greatest reason for the high turnover rate among TDCJ [Texas Department of Criminal Justice] staff, second only to low pay. Complaints about overheating and extreme heat conditions consistently rank among the top four or five workplace complaints from TDCJ correctional staff.” HUMAN RIGHTS CLINIC, UNIV. OF TEX. SCH. OF LAW, RECKLESS INDIFFERENCE: DEADLY HEAT IN TEXAS PRISONS 11–12 (2015), available at law.utexas.edu/wp-content/uploads/sites/11/2015/04/2015-HRC-USA-Reckless-Indifference-Report.pdf (citations omitted).

The existence of a particular policy or rule certainly does not guarantee its enforcement. It does, however, provide a legal framework for the administration of correctional facilities and may offer leverage to inmates, correctional officers, or other advocates who seek to pressure correctional departments into improving temperature conditions inside correctional facilities.

Many states have rules that define specific permissible temperature ranges or maximum temperatures for local or municipal jails. For example, in Maine, all inmate housing areas in county jails, holding facilities, and short-term detention areas must be kept between 65 and 85°F.³³¹ Texas has the same requirement for its county correctional centers, jails, and lockups.³³² Often such rules only apply to new construction. Thus, Kentucky requires that living areas and direct-supervision areas in all new local correctional facilities be designed to maintain temperatures between 65 and 85°F.³³³ Another common requirement is that temperatures be kept within the seasonal “comfort zone,” a term that is not always defined.³³⁴ As an example, Massachusetts requires independent verification every three years that the temperatures in all living areas are appropriate to the winter and summer comfort zones.³³⁵ For the most part, such temperature regulations apply only to jails, not prisons.

A number of states have adopted specific protocols that departments must follow when temperatures cross a given threshold. Iowa, for example, requires that fans and adequate supplies of cold liquids be made available and used when interior temperatures in jails and

³³¹ 03-201 ME. CODE R. ch. 1, §§ II.a(R.20) (county jails), II.b(H.43) (holding facilities), II.c(SDA.22) (short-term detention areas) (LexisNexis 2015).

³³² 37 TEX. ADMIN. CODE §§ 260.154 (county correctional centers), 261.160 (maximum-security jails), 261.255 (lockups), 261.350 (minimum-security jails) (2015).

³³³ 501 KY. ADMIN. REGS. 3:050, § 10(16)(a)(3), (17)(c) (2015). The same requirement applies to occupied areas in new restricted-custody centers. 7:050, § 10(3)(e)(6).

³³⁴ To receive accreditation by the American Correctional Association, a facility must demonstrate that “[t]emperatures in indoor living and work areas are appropriate to the summer and winter comfort zones.” AM. CORR. ASS’N, ADULT CORRECTIONAL INSTITUTIONS, § 4-4153 (4th ed. 2006). In 2012, the ACA Standards Committee considered a proposal to replace this standard with ANSI/ASHRAE Standard 55, “Thermal Environmental Conditions for Human Occupancy.” Standard 55, promulgated by the American Standards Institute and the American Society of Heating, Refrigerating and Air-Conditioning Engineers, is more specific, objective, and robust than the ACA standard. The proposal was referred to the Physical Plant Standards Subcommittee but does not seem to have gone anywhere. *See* Am. Corr. Ass’n, *Standards Committee Meeting Minutes* [98–100] (July 20, 2012), [aca.org/ACA_PROD_IMIS/docs/Standards and Accreditation/sac_August_2012.pdf](http://aca.org/ACA_PROD_IMIS/docs/Standards%20and%20Accreditation/sac_August_2012.pdf).

³³⁵ 103 MASS. CODE REGS. 920.10(3) (2015)

temporary holding facilities exceed 85°F.³³⁶ Virginia regulations require that air conditioning or mechanical ventilation systems such as fans be provided when temperatures in jails and lockups rise above 85°F.³³⁷ South Dakota goes much further, requiring regular monitoring of the heat index and specifying measures that must be taken when the heat index reaches 105°F, including carefully observing inmates for signs of heat stress and suspending strenuous outdoor work and recreation.³³⁸

Some jurisdictions have adopted specific rules to protect inmates who are at greater risk of heat stress because they take psychotropic drugs. Alabama, Delaware, New Mexico, Ohio, and Vermont, for example, all require correctional staff to identify such inmates, educate them about the dangers that heat and sun exposure pose to them and about preventive measures they should use to protect themselves, and take specific steps to reduce the danger of heat illness when cell temperatures reach 90°F.³³⁹

Extreme heat is treated more as an occupational hazard than as an environmental or residential hazard in certain jurisdictions. Thus, Georgia, which has no regulations or policies concerned with heat in inmate housing, requires correctional staff to be “particularly alert to the early detection of symptoms and the prevention of cases of heat exhaustion” among inmates working outdoors during hot weather, and singles out new inmates and those “who have not acclimated to the environment” for particular attention.³⁴⁰ Texas, which regulates temperatures in local jails but not state prisons, has detailed policies to protect both inmate workers and correctional staff from the dangers of working in hot weather.³⁴¹

³³⁶ IOWA ADMIN. CODE §§ 201-50.4(3) (jails), 201-51.4(3) (holding facilities) (2015).

³³⁷ 6 VA. ADMIN. CODE § 15-40-1160(C) (2015).

³³⁸ See S.D. DEP’T OF CORR., POLICY 1.5.C.1, § IV(1)–(3) (2014). This policy was scheduled for revision in March 2015.

³³⁹ See ALA. DEP’T OF CORR., ADMIN. REG. 419, §§ IV–V (change no. 1, 2005); DEL. DEP’T OF CORR, POLICY D-02.1, § V (2010); N.M. CORR. DEP’T, POLICY CD-171501 (2013); OHIO DEP’T OF REHAB. & CORR., POLICY 67-MNH-07, § H (2015); VT. DEP’T OF CORR., PROTOCOL 361.01.14, § V(G) (1997).

³⁴⁰ GA. COMP. R. & REGS. 125-3-5-.04(1)(d) (2015).

³⁴¹ See TEX. DEP’T OF CRIM. JUST., CORRECTIONAL MANAGED HEALTH CARE POLICY MANUAL D-27.2 (2014). In a recent report, however, the Human Rights Clinic at the University of Texas School of Law presented evidence that Texas prison officials often require heat-sensitive inmates to work in extremely hot environments such as kitchens and laundries, casting doubt on whether this administrative directive provides any meaningful protection for inmate workers. See HUMAN RIGHTS CLINIC, UNIV. OF TEX. SCH. OF

At least partly as a consequence of litigation, Maryland has particularly comprehensive policies to protect pretrial detainees.³⁴² A key component of these policies is “heat stratification,” which involves assessing all arrestees at intake to evaluate their individual susceptibility to heat-related illness and then assigning them each a heat-risk code.³⁴³ That code determines housing assignments and provisions for respite during periods of high heat.³⁴⁴

As the warming effects of climate change become more pronounced in the coming years, more correctional officers and inmates will suffer heat-related illness. New policies and regulations may address those harms and seek to minimize future injuries. Many correctional departments will be unable to remain in compliance with existing policies and regulations, or to come into compliance with new ones, without implementing adaptive measures.

3.5 Mandated Adaptation Efforts

Executive orders or other legal mandates may require correctional departments to begin adaptation planning and action. In 2009, President Obama issued an executive order requiring all federal agencies to prepare and annually update strategic sustainability performance plans.³⁴⁵ Those plans must include evaluations of “agency climate-change risks and vulnerabilities to manage the effects of climate change on the agency’s operations and mission in both the short and long term.”³⁴⁶ In compliance with that requirement, federal agencies have

LAW, RECKLESS INDIFFERENCE: DEADLY HEAT IN TEXAS PRISONS 23–24 (2015), available at law.utexas.edu/wp-content/uploads/sites/11/2015/04/2015-HRC-USA-Reckless-Indifference-Report.pdf.

³⁴² See *Duvall v. O’Malley*, No. 94-cv-2541 (D. Md. Aug. 18, 2009) (partial settlement agreement); *Duvall*, No. 94-cv-2541 (D. Md. Apr. 18, 2012) (report and recommendation that motion to amend partial settlement agreement be granted); *Duvall*, No. 94-cv-2541 (D. Md. May 8, 2012) (order granting approval of amendment to partial settlement agreement).

³⁴³ MD. DIV. OF DET. & PRETRIAL SERVS., DIRECTIVE DPDS.185.0008.05, § A (2009); MD. OFFICE OF INMATE HEALTH SERVS., MED. EVALS. MANUAL, ch. 1, sec. 1A, pt. I, § II(D)(2)(a) (2009).

³⁴⁴ MD. DIV. OF DET. & PRETRIAL SERVS., DIRECTIVE DPDS.185.0008.05, § B (2009).

³⁴⁵ Exec. Ord. 13514: Federal Leadership in Environmental, Energy, and Economic Performance, 74 Fed. Reg. 52,117 (Oct. 8, 2009). The executive order also required agencies to pursue reductions of greenhouse gas emissions; “implement high performance sustainable Federal building design, construction, operation and management, maintenance, and deconstruction”; and designate Senior Sustainability Officers who would be accountable for agency conformance with the order. *Id.* §§ 2(a)–(c), (g), 7.

³⁴⁶ *Id.* § 8(i).

produced climate change adaptation plans.³⁴⁷ Because the Federal Bureau of Prisons is part of the US Department of Justice, it is included in DOJ's *Climate Change Adaptation Plan*, the details of which are discussed below in section 3.³⁴⁸

Some state governors have also issued executive orders requiring state agencies to take measures to address climate change. For example, a 2014 executive order requires Rhode Island state agencies, of which the Department of Corrections is one, to assist a newly created Executive Climate Change Council by assessing the vulnerability of public infrastructure to impacts of climate change and recommending strategies to protect that infrastructure.³⁴⁹ And in Virginia, the Secretariat of Public Safety and Homeland Security, which includes the Department of Corrections, co-chairs a commission convened in 2014 and charged with updating and prioritizing the recommendations contained in the state's 2008 *Climate Action Plan*.³⁵⁰ Those recommendations included having state agencies develop adaptation plans for the infrastructure for which they are responsible, based on a minimum increase of 3.6°F in air and water temperatures and at least a 2.3-foot rise in sea level.³⁵¹ While these and other executive orders from state governors have not yet mandated the level of adaptation planning and action that exists at the federal level, future orders from state and local executives, or comparable legislative enactments, are likely to impose increasingly significant adaptation requirements on state agencies as the climate crisis progresses.

³⁴⁷ See Press Release, Council on Env'tl. Quality, Obama Administration Releases Federal Agency Strategic Sustainability Performance Plans (Feb. 7, 2013), whitehouse.gov/administration/eop/ceq/Press_Releases/February_07_2013; Press Release, Council on Env'tl. Quality, Obama Administration Releases Federal Agency Climate Plans on Fifth Anniversary of Presidential Sustainability Initiative (Oct. 31, 2014), whitehouse.gov/administration/eop/ceq/Press_Releases/October_31_2014. A 2013 executive order spelled out the required contents of Adaptation Plans. See Exec. Ord. 13653: Preparing the United States for the Impacts of Climate Change, 78 Fed. Reg. 66,819 (Nov. 6, 2013).

³⁴⁸ The current DOJ *Climate Change Adaptation Plan* is available at justice.gov/sites/default/files/jmd/pages/attachments/2014/10/30/doj-climate-change-adaptation-plan.pdf. It updates the first *Climate Change Adaptation Plan*, which can still be found at justice.gov/sites/default/files/jmd/legacy/2014/03/07/doj-ccap-2012.pdf.

³⁴⁹ See R.I. Exec. Ord. 14-01: Rhode Island Executive Climate Change Council, § 4(g) (Feb. 21, 2014).

³⁵⁰ See Va. Exec. Ord. 19: Convening the Governor's Climate Change and Resiliency Update Commission 2 (July 1, 2014).

³⁵¹ See GOVERNOR'S COMM'N ON CLIMATE CHANGE, FINAL REPORT: A CLIMATE CHANGE ACTION PLAN 35, 60 (2008), sealevelrisevirginia.net/docs/homepage/CCC_Final_Report-Final_12152008.pdf.

3.6 The Legal Context for Adaptation

The above review of legal dimensions of the climate challenge for corrections permits some generalizations about the legal context for adaptation. First, litigation will almost certainly continue to exert pressure on correctional departments to protect inmate and employee populations from excessive heat. Successful constitutional litigation by inmates can result in court-ordered change that may be more costly than other adequate measures that departments might have taken on their own accord. Once constitutional violations are established and remedial actions are ordered, financial constraints will not justify noncompliance with ordered relief. While litigation may be the only route to adaptation in jurisdictions that would not otherwise act in the face of the climate threat, it is an inefficient means of reform. Judges are also less likely to craft optimal prescriptions for adaptation than policymakers, engineers, scientists, and other professionals.

Second, outside the context of litigation the legal pressures to adapt are few at this point. Policies, rules, and regulations in some jurisdictions require that correctional facilities meet certain requirements for internal temperature but those requirements are not couched in the language of climate-change adaptation. The one significant exception is at the federal level, where executive action has driven adaptation efforts. But if adaptation is, for the most part, not legally required today, the full brunt of climate change is still ahead of us. As the years elapse and climate change increases, the law may begin to catch up and require public agencies to undertake adaptation in earnest. Of course, correctional departments need not wait for the law to require them to begin adaptation efforts. Adaptation will advance their missions regardless of any legal mandates.

Third, the lack of legal pressures to undertake adaptation has a positive corollary, which is that forward-thinking correctional administrators have few legal constraints on their formulation of adaptive strategies. That fact, combined with the current resurgence of interest in the correctional sector and in reducing mass incarceration, growing concern about climate change, and an increasingly solid scientific consensus around what changes to expect, makes the time ripe for correctional administrators to begin to devote resources to adaptation.

The next section takes up the question of what adaptation might look like in the correctional sector.

4 ADAPTATION CHALLENGES AND OPTIONS

Climate change requires all public agencies, including correctional departments, to determine how it will likely impact their mission, programs, and operations, and to find ways to minimize its negative impacts. Neither the challenges nor the solutions will look the same in all places. There is ample room for correctional departments to collaborate with each other and with other public agencies in preparing, deploying, and adjusting adaptation strategies. But ultimately each department must tailor its adaptation efforts to its own circumstances.

While the correctional sector has not led the way, other entities, both public and private, have been grappling with the adaptation challenge for years. As departments begin to assess their vulnerabilities and options, they will not have to reinvent the wheel. Many departments will be able to plug into efforts already underway in their states or localities.³⁵² For those at the vanguard of adaptation in their jurisdiction, resources of many kinds are readily available to guide and support their efforts.³⁵³

³⁵² For information about existing state and local efforts, see, e.g., *State and Local Adaptation Plans*, GEORGETOWN CLIMATE CENTER, georgetownclimate.org/adaptation/state-and-local-plans (last visited Aug. 1, 2015); *Law and Governance*, GEORGETOWN CLIMATE CENTER, georgetownclimate.org/search/apachesolr_search?featured=lg (last visited Aug. 1, 2015); *State and Local Climate Blackboard*, CENTER FOR CLIMATE STRATEGIES, climatestrategies.us/policy_tracker/state (last visited Aug. 1, 2015).

³⁵³ See, e.g., *Climate Change Adaptation Resources*, SABIN CENTER FOR CLIMATE CHANGE LAW, web.law.columbia.edu/climate-change/resources/adaptation-resources (last visited Aug. 1, 2015). One of several useful starting points for adaptation planning is the US Climate Resilience Toolkit, a resource of the federal government that is available at toolkit.climate.gov. Another is the *Adaptation* section of the US Global Change Research Program's 2014 *National Climate Assessment*, available as a web-based publication at nca2014.globalchange.gov/report/response-strategies/adaptation or for download at nca2014.globalchange.gov/downloads. The Environmental Protection Agency's *Adaptation Tools for Public Officials*, available at epa.gov/climatechange/impacts-adaptation/adapt-tools.html, provides links to many resources that will be of interest to public officials. Guidance documents and materials used by federal agencies in their adaptation planning are available at *Climate Change Adaptation*, FEDCENTER.GOV, fedcenter.gov/kd/go.cfm?destination=Page&Pge_ID=3853 (last visited Aug. 1, 2015). The Adaptation Clearinghouse at the Georgetown Climate Center, available at georgetownclimate.org/adaptation/clearinghouse, offers a wealth of useful information and links to many valuable resources. For a legal perspective on adaptation, begin with Michael B. Gerrard and Katrina Fischer Kuh's edited collection *The*

Adaptation in the correctional sector presents a mix of common and unusual challenges. This section begins with some observations about adaptation in general, then explores special considerations for corrections, and finally suggests possible adaptation options to address the problem of excessive heat in light of those special challenges.

4.1 The Basics of Adaptation

Like climate change itself, adaptation is a process, not an isolated event. And like climate change, adaptation is a long-term process, much of which lies beyond the immediately visible horizon. It requires thoughtful action on the basis of sometimes incomplete information, as many of the minute details of localized climate changes and impacts will not be known with a high degree of precision until it is too late to move proactively to minimize harmful consequences.

Although this uncertainty complicates adaptation, risk management is a basic part of public administration; administrators must often make policy choices based on probabilities rather than certainties. Just as uncertainty about future crime rates, inmate numbers, and the incidence of recidivism does not prevent policy makers from formulating and implementing correctional policy, uncertainty about how high temperatures and sea levels will rise, and how quickly, does not preclude successful, proactive adaptation planning and action. While the scale, complexity, and novelty of the task may seem paralyzingly daunting, delay will only make subsequent action more costly and difficult.

The first step in preparing for the impacts of climate change is committing to a policy of adaptation and assigning administrative responsibility for research, decision making, implementation, and collaboration.³⁵⁴ The initial work of the adaptation officers or team consists of making a variety of assessments: What are the most likely local impacts of climate change? How are the department and its assets vulnerable? What are the most pressing risks? What

Law of Adaptation to Climate Change (2012), particularly Robert L. Fischman and Jillian R. Rountree's chapter on *Adaptive Management* (19–47) and J. Cullen Howe's chapter on *Buildings* (209–34).

³⁵⁴ A useful model policy statement for climate change adaptation is available in COUNCIL ON ENVTL. QUALITY, FEDERAL AGENCY CLIMATE CHANGE ADAPTATION PLANNING: SUPPORT DOCUMENT, App. C (2011), [whitehouse.gov/sites/default/files/microsites/ceq/adaptation_support_document_3_3.pdf](https://www.whitehouse.gov/sites/default/files/microsites/ceq/adaptation_support_document_3_3.pdf).

resources are available for adaptation and what additional resources are needed? What opportunities exist for learning about climate impacts and adaptation options? Departments can tackle these kinds of questions far more productively and effectively by building partnerships with one another and with both public and private entities that are already engaged in adaptive efforts.

Identifying a department's vulnerabilities involves considering three interrelated issues: exposure, sensitivity, and capacity to adapt.³⁵⁵ *Exposure* refers to particular expected impacts and the systems or assets they will affect. A correctional department's exposure might include the threat of high temperatures to its facilities. *Sensitivity* refers to how prone a system or asset is to harm from a given exposure. Thus, a correctional facility that lacks any mechanical system for climate control and a similar one that has high-capacity air conditioning may share *exposure* to the same level of extreme heat, but the first facility has greater *sensitivity* to harm from that exposure. Finally, *adaptive capacity* refers to the room for making adjustments to a threatened system or asset to minimize any harmful consequences of a given exposure. For example, a correctional facility with a failing air-conditioning system may have greater adaptive capacity than one built without any air conditioning at all, since repair is often easier than retrofitting. On a human level, inmates and correctional officers in good health have a greater capacity to adapt to high temperatures than those who are unwell. By considering their exposures, sensitivities, and adaptive capacities, correctional departments can determine their greatest vulnerabilities and then set priorities for adaptive action, bearing in mind that vulnerabilities change over time and must therefore be periodically reassessed.

A department's most vulnerable assets may not all be appropriate priorities for adaptation efforts. For example, a department would not likely prioritize adaptation of a highly vulnerable facility that is near the end of its expected useful life. Setting priorities for adaptation generally

³⁵⁵ See, e.g., CTR. FOR CLIMATE & ENERGY SOLUTIONS, CLIMATE CHANGE 101: ADAPTATION 6 (2011), c2es.org/docUploads/climate101-adaptation.pdf. For a detailed theoretical discussion of the concept of "vulnerability," see Omar-Dario Cardona et al., *Determinants of Risk: Exposure and Vulnerability*, in MANAGING THE RISKS OF EXTREME EVENTS AND DISASTERS TO ADVANCE CLIMATE CHANGE ADAPTATION 65, 69–72 (Intergovernmental Panel on Climate Change, 2012), ipcc.ch/pdf/special-reports/srex/SREX-Chap2_FINAL.pdf.

involves weighing a number of criteria, including the magnitude of a specific risk, its probability and timing, and equitable considerations.³⁵⁶ A risk is of high *magnitude* if it endangers important assets or systems and threatens to have particularly costly consequences, such as death or economic loss. Where the *probability* of a particular risk is high, as is the case with extreme temperatures, it generally takes higher priority. The *timing* of a risk may increase its priority, though postponing action on less imminent risks may come at the cost of losing the best chance to avert them. *Equitable* concerns will likely come into play as correctional departments compete with other public agencies for scarce adaptation dollars, given prevailing public attitudes toward inmates. Whatever priorities correctional departments set for their adaptation efforts, the dynamic natures of climate change and adaptation may require departments to change their priorities over time.

Once vulnerabilities are assessed and priorities established it becomes possible to consider specific adaptation options, taking into account their relative costs and benefits. The most attractive adaptation options are those that address existing needs irrespective of climate change and that, therefore, do not depend on climate change to justify the investment. One such option is making use of passive-cooling technologies such as insulation and cool roofs in new construction. Not only does passive cooling make it easier to handle increased heat, it reduces energy needs, which can save money as well as help cut carbon emissions. Other options, such as avoiding new construction in areas that are likely to become vulnerable to flooding in the future, yield no additional benefits beyond adaptation but do not entail prohibitive costs. While such options are appealing, in many contexts truly effective adaptation may require more costly and difficult choices. One example is the need to relocate existing vital assets that are at risk of catastrophic loss due to rising sea levels.

³⁵⁶ See Michael Oppenheimer et al., *Emergent Risks and Key Vulnerabilities*, in CLIMATE CHANGE 2014: IMPACTS, ADAPTATION, AND VULNERABILITY. PART A: GLOBAL AND SECTORAL ASPECTS. CONTRIBUTION OF WORKING GROUP II TO THE FIFTH ASSESSMENT REPORT OF THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE 1039, 1052 (Christopher B. Field et al. eds., IPCC, 2014), ipcc-wg2.gov/AR5/images/uploads/WGIIAR5-Chap19_FINAL.pdf; CTR. FOR CLIMATE & ENERGY SOLUTIONS, CLIMATE CHANGE 101: ADAPTATION 7 (2011), c2es.org/docUploads/climate101-adaptation.pdf.

Some adaptations may appear to make sense in the short term but may prove to be maladaptive in the long run. A simple example would be retrofitting an existing facility with air conditioning based on current temperature levels without considering projected future temperatures. The added cost of later upgrading such a system to meet future conditions—or retiring the poorly adapted facility altogether—could well exceed the cost of installing a system with sufficient capacity in the first place. In addition, even relatively efficient air conditioning systems use electricity, thereby contributing to the problem of climate change as long as we remain dependent on fossil fuels for power generation.

Ongoing collaboration among public and private entities is essential to successful adaptation. Adaptation efforts are strengthened by the systematic sharing and exchange of knowledge, expertise, and resources among agencies at all levels of government, the scientific community, and the private sector. Because significant adaptation work has been taking place at the federal level for several years, federal agencies are particularly well suited to support nascent state and local efforts.³⁵⁷ To some degree collaboration is not only prudent but also necessary, since society and its institutions are highly interdependent. For example, higher temperatures will likely affect water and food supplies, tax the electric grid, and strain complex systems of all sorts. Successful adaptation to such impacts will depend on coordinated and collaborative efforts.

4.2 Special Challenges for Corrections

Beyond the basics outlined above, adaptation in the correctional context will require addressing a number of special challenges. This section addresses some of those considerations.

4.2.1 Security

All correctional policies must address security concerns and adaptation policies will be no different. Adaptation options will be shaped and limited by the need to ensure the safety and

³⁵⁷ There are a variety of useful online federal resources to support adaptation. See, e.g., U.S. CLIMATE RESILIENCE TOOLKIT, toolkit.climate.gov (last visited Aug. 1, 2015); *Climate Change Adaptation*, FEDCENTER.GOV, fedcenter.gov/programs/climate (last visited Aug. 1, 2015); *Adaptation*, GLOBALCHANGE.GOV, nca2014.globalchange.gov/report/response-strategies/adaptation (last visited Aug. 1, 2015); *Adaptation Tools for Public Officials*, EPA, epa.gov/climatechange/impacts-adaptation/adapt-tools.html (last updated Sept. 9, 2013).

security of the general public, of correctional workers, and of inmates. Security concerns also underline the importance of careful long-term advance planning and preparation so as to minimize improvisation during extreme-heat events. And certain aspects of adaptation planning itself may need to be kept confidential for reasons of security, which can complicate collaboration with public- and private-sector partners.

Adaptation strategies that involve retrofitting existing correctional facilities may present security difficulties, since some retrofitting work will necessarily require relocating inmates. Temporarily accommodating the inmates from a small facility while retrofitting is underway may not be terribly difficult but finding space to house the inmates of larger facilities on a temporary basis may be quite another matter. This is one of many reasons not to delay proactive adaptation planning and action.

The need to maintain custody over inmates and to keep them in secure locations, segregated from the general public, also makes some common short-term options for weathering periods of extreme heat impractical. Public cooling centers, for example, cannot serve as resources for correctional populations. Correctional facilities must be self-sufficient, developing on-site cooling capacity to meet foreseeable cooling needs, backed up by stormproof generators that can run cooling systems in the event of blackouts or brownouts.³⁵⁸ Facilities that capitalize on opportunities for passive cooling and minimize their reliance on energy-dependent mechanical cooling will be best prepared to maintain cooling capacity when power supplies are stressed or disrupted.

Security concerns also make short-term relocation of inmates from facilities with inadequate cooling to better-prepared facilities during extreme-heat events a poor option. Even when secure receiving locations are available, relocating large numbers of inmates presents

³⁵⁸ Renewable generating sources such as windmills and photovoltaic arrays cannot presently provide reliable emergency backup power because they generate electricity intermittently (when the wind blows or the sun shines) and because battery technology has not yet advanced to the point of making large-scale storage practical. Storage is now a priority area for research and development. *See, e.g.,* Umair Irfan and ClimateWire, *Battery Storage Needed to Expand Renewable Energy*, SCI. AM. (Feb. 13, 2015), [scientificamerican.com/article/battery-storage-needed-to-expand-renewable-energy](https://www.scientificamerican.com/article/battery-storage-needed-to-expand-renewable-energy).

considerable difficulty and always entails significant risk.³⁵⁹ Furthermore, because heat waves are rarely localized, secure locations to which inmates might otherwise be evacuated may already be hard-pressed to handle their own cooling needs without having to accommodate an influx of additional inmates.

4.2.2 Unique Buildings

Another factor that distinguishes correctional facilities is their unusually high population density, which has important implications for the problem of excessive heat. Jails and prisons are not designed to provide spacious housing for inmates. Whether formally overcrowded or not, correctional facilities hold large numbers of people relative to their interior volume, particularly in their housing tiers. Numbers dip somewhat at night when fewer correctional officers and other staff are needed on site, but for the most part the population density in correctional facilities remains high around the clock.

Every inmate and correctional officer contributes heat to the indoor environment, adding to the cooling load that a climate-control system has to carry. Just to dissipate the heat added by 600 people requires around 240,000 BTUs-per-hour of cooling capacity—the equivalent of a 20-ton air-conditioning system—on top of the capacity dictated by outdoor temperatures.³⁶⁰ Given

³⁵⁹ Correctional departments have managed effective evacuations of sizable facilities in the past. For example, in August 1992, the Florida Department of Corrections successfully evacuated some 1,000 inmates held at Dade Correctional Institute as Hurricane Andrew bore down on the state. *See* NAT'L INST. OF CORR., NIC 020293, A GUIDE TO PREPARING FOR AND RESPONDING TO PRISON EMERGENCIES 319–21 (2005). Many factors contributed to the successful outcome, including comprehensive advance planning, particularly effective leadership, dedicated and courageous staff, and inmate cooperation. *See id.* at 321–32; *see also id.* at 289–91 (recounting successful evacuation by Missouri Department of Corrections of hundreds of inmates from Renz Correctional Center during 1993 floods). Such examples stand in stark contrast to the calamitous situation at Orleans Parish Prison during and after Hurricane Katrina, where no attempt was made to evacuate the facility before the storm hit. Inmates and staff were stranded for days in the flooded and sweltering prison, which was without power because floodwaters had submerged the backup generators. Their eventual evacuation was a haphazard exercise in improvisation that should serve as an object lesson in how not to evacuate a correctional facility. *See, e.g.*, ACLU NATIONAL PRISON PROJECT, ABANDONED AND ABUSED: ORLEANS PARISH PRISONERS IN THE WAKE OF KATRINA (2006), aclu.org/prisoners-rights/abandoned-and-abused; DEMAREE INGLESSE, NO ORDINARY HEROES: 8 DOCTORS, 30 NURSES, 7,000 PRISONERS, AND A CATEGORY 5 HURRICANE (2007).

³⁶⁰ This estimate assumes that each person adds 400 BTUs per hour to the cooling load. *See* THE “PEOPLE LOAD,” HEATING, AIRCONDITIONING & REFRIGERATION DISTRIBS. INT’L 1 (n.d.), hvacsalesandsupply.com/Linked Documents/Tech Tips/26-The people load.pdf.

this immutable factor, it is particularly important for correctional facilities to minimize the penetration of outdoor heat during the summer.

4.2.3 Unstable Population Size

The size of the inmate population today—and therefore the scale and difficulty of correctional departments’ responsibilities—is radically different from what it was a generation or so ago. By the middle of this century, the inmate population may shrink or swell significantly, or remain roughly the same. Only for the relatively short term can correctional departments predict with confidence how many inmates they must be prepared to hold in confinement, since crime, law enforcement, and sentencing policies are all subject to trends over which the correctional sector has little direct influence. The uncertainty about rises and drops in inmate populations is another special challenge for correctional adaptation to a warmer climate. Because the difficulty of maintaining a healthy interior climate in a prison or jail increases significantly with overcrowding, correctional departments must develop and maintain a margin of excess cooling capacity if they are to be adequately prepared for extreme heat, which can entail capital outlays for contingencies that may never materialize. The alternative is to risk having to accommodate an inmate population beyond what facilities can handle, jeopardizing the health and safety of both correctional workers and inmates and exposing the state to costly litigation.

4.2.4 Unpopular Constituency

Adaptation entails expenses. Some of the costs may well be high. It will be far easier to sell public spending to adapt schools, hospitals, and some other public facilities to rising temperatures than to adapt prisons and jails.³⁶¹ Correctional departments already have to fulfill a demanding mission with inadequate resources. They will likely find themselves at a unique disadvantage as they are forced to compete with more popular sectors for scarce adaptation funds. While public sentiment is shifting away from support for harsh sentencing and mass

³⁶¹ Several studies show minimal support for increasing spending on prisons at the expense of other areas such as health, education, or infrastructure. See OPPORTUNITY AGENDA, AN OVERVIEW OF PUBLIC OPINION AND DISCOURSE ON CRIMINAL JUSTICE ISSUES 26 (2014), opportunityagenda.org/files/field_file/2014.08.23-CriminalJusticeReport-FINAL_0.pdf.

incarceration and toward support for crime prevention and rehabilitative services, that shift does not translate into willingness to increase public spending on corrections.³⁶² Perhaps ironically, the pressure of inmate litigation around conditions of confinement may give correctional departments leverage in the contest for adaptation dollars.

4.3 Options

4.3.1 Reduce the Size of the Incarcerated Population

One rational approach to the adaptation challenge in corrections is to reduce the size of the problem by reducing the size of the incarcerated population. On the face of it, this may seem like a naïve exercise in denial, an effort to avoid the problems that climate change presents rather than deal with them. In fact, promising efforts are already underway to shrink the correctional population, for reasons that have nothing to do with climate change but that dovetail perfectly with the sector's adaptation needs.³⁶³ Policy changes such as sentencing reforms and putting more resources into reducing crime and recidivism have brought down inmate populations in some jurisdictions.³⁶⁴ In recent years, California, New Jersey, and New

³⁶² See *id.* at 7–8 (2014) (reporting meta-analysis of public-opinion research). A 2013 study of US voters found that 52 percent believed that society spends too much on prisons. See *id.* at 26.

³⁶³ California is under federal court orders to reduce its adult prison population. See *Brown v. Plata*, 131 S. Ct. 1910, 1923 (2011) (affirming court order requiring California to reduce adult prison population to 137.5 percent of prisons' design capacity). Much of the reductions elsewhere have been due to policies adopted under the umbrella of "justice reinvestment," a public-private initiative begun by the US Department of Justice Bureau of Justice Assistance and the Pew Charitable Trusts and now involving additional partners. Details about justice reinvestment projects in 24 states and 17 local jurisdictions are available from BJA at [bj.gov/programs/justicereinvestment/index.html](http://bja.gov/programs/justicereinvestment/index.html). See also *Public Safety Performance Project*, PEW CHARITABLE TR., pewtrusts.org/en/projects/public-safety-performance-project (last visited Aug. 1, 2015); *About Justice Reinvestment*, JUST. CTR., csgjusticecenter.org/jr/about (last visited Aug. 1, 2015); *Justice Reinvestment Initiative*, VERA INST. OF JUST., vera.org/project/justice-reinvestment-initiative (last visited Aug. 1, 2015); *Justice Reinvestment at the Local Level*, URB. INST., urban.org/center/jpc/justice-reinvestment/index.cfm (last visited Aug. 1, 2015); *Justice Reinvestment Initiative (JRI)*, CRIME & JUST. INST., crj.org/cji/entry/project_justicereinvest (last visited Aug. 1, 2015).

³⁶⁴ See, e.g., *Success Stories*, BJA, bj.gov/programs/justicereinvestment/success_stories.html (last visited Aug. 1, 2015); *Justice Reinvestment Publications*, JUST. CTR., csgjusticecenter.org/jr/publications-library (last visited Aug. 1, 2015).

York have all reduced their prison populations by around a quarter without seeing any increase in crime.³⁶⁵

Not only does downsizing the incarcerated population promise to make other adaptation strategies more manageable, it also speaks to special difficulties that adaptation presents for corrections. Security considerations become less complicated and challenging with a smaller inmate population, and particularly problematic facilities can be retired. Reducing the inmate population lowers individual facilities' population density, provided that capacity is not cut in lockstep with population reductions. Facilities with lower population density are more able to handle an elastic supply of inmates. And bringing down the number of inmates without triggering an increase in crime adds to the credibility and perceived effectiveness of the criminal justice system, thereby strengthening its hand in competition for scarce adaptation funds.

Needless to say, reducing the incarcerated population cannot come at the expense of increasing crime or otherwise compromising public safety. While shorter sentences, more effective rehabilitation and reentry services, more supportive parole and supervision, and other policies can bring down inmate populations over time, downsizing can only go so far before it produces unacceptable consequences. It also bears noting that increasing the rate at which older inmates are released as part of overall downsizing, particularly older inmates with cognitive impairment or mental illness, could have significant implications for community resources and public health as a whole, since older former inmates already make heavy use of emergency health care and are frequently hospitalized after release.³⁶⁶

³⁶⁵ Marc Mauer & David Cole, Opinion, *How to Lock Up Fewer People*, N.Y. TIMES, May 24, 2015, Sunday Review at 6, nytimes.com/2015/05/24/opinion/sunday/how-to-lock-up-fewer-people.html.

³⁶⁶ See Brie A. Williams et al., *Addressing the Aging Crisis in U.S. Criminal Justice Health Care*, 60 J. AM. GERIATRICS SOC. 1150, 1150, 1154 (2012), ncbi.nlm.nih.gov/pmc/articles/PMC3374923/pdf/nihms363409.pdf. One study found that in the two weeks following release from prison older former inmates were significantly more susceptible to health-related mortality than younger former inmates. See Ingrid A. Binswanger et al., *Release from Prison: A High Risk of Death for Former Inmates*, 356 N. ENGL. J. MED. 157, 159-61 (2007), nejm.org/doi/pdf/10.1056/NEJMsa064115.

4.3.2 Reduce Inmates' and Correctional Officers' Susceptibility to Heat Stress

4.3.2.1 Acclimatize Inmates and Correctional Officers to Heat

In 2011, Larry Gene McCollum, 58, received a one-year sentence in Texas for a minor, nonviolent offense.³⁶⁷ After serving the first month of his sentence in the air-conditioned McLennan County Jail, he was transferred in July to the Hutchins State Jail in Dallas County and assigned to a cell without air conditioning, a fan, or a window that could be opened. Within a week of his transfer the indoor heat index hit 150°F and McCollum died of heatstroke. Earlier in the week, Douglas Hudson, 62, had died from heatstroke after three days at the Joe F. Gurney Transfer Facility in Anderson County, Texas.³⁶⁸ Two weeks later, Kenneth James, 52, also died from heatstroke three days after arriving at Gurney.³⁶⁹ A year later, Rodney Adams, 45, died from heatstroke the day after he arrived at Gurney.³⁷⁰

At the time of their deaths, McCollum, Hudson, James, and Adams were all taking medications that increased their susceptibility to heat illness, and some had other risk factors.³⁷¹ But the suddenness of their deaths after arrival at overheated facilities illustrates the importance of acclimatization to surviving exposure to hot environments.³⁷²

Heat acclimatization is the adaptation of the body over time to a high-temperature environment. Over the course of days or weeks, the body's ability to dissipate heat through perspiration improves and blood vessels undergo physiological changes that increase heat

³⁶⁷ The facts of McCollum's story are taken from Jacquelyn Floyd, *The Crime of Un-Air-Conditioned Texas Prisons*, DALL. MORNING NEWS (Apr. 24, 2014, 11:01 PM), dallasnews.com/news/columnists/jacquielynn-floyd/20140424-the-crime-of-un-airconditioned-texas-prisons.ece.

³⁶⁸ Brief for Amicus Curiae Families of Deceased Texas Prisoners (Filed in Support of Appellees Elzie Ball, Nathaniel Code, and James Magee, and Urging Affirmation), *Ball v. LeBlanc*, No. 14-30067 at 20 (5th Cir. Sept. 30, 2014).

³⁶⁹ *Id.*

³⁷⁰ *Id.*

³⁷¹ *Id.*

³⁷² In general, jail inmates are at greatest risk of dying of whatever cause within their first week in a new facility. Out of the 958 inmates who died in local jails during 2012, more than a third—348—had served seven or fewer days. BUREAU OF JUSTICE STATISTICS, NCJ 247448, MORTALITY IN LOCAL JAILS AND STATE PRISONS, 2000–2012: STATISTICAL TABLES 8 tbl.4 (2014), bjs.gov/content/pub/pdf/mljsp0012st.pdf. The 2012 data are typical. *See id.* at 9 tbl.5. The Bureau of Justice Statistics does not appear to collect comparable data for prison-inmate deaths.

resistance.³⁷³ When people are exposed to high heat without having time to acclimatize, they can suffer serious or fatal heat illness. A recent study of 20 cases of heat-related workplace death or injury cited for federal enforcement under section 5(a)(1) of the Occupational Safety and Health Act found that employers' "failure to support acclimatization appears to be the most common deficiency and the factor most clearly associated with death."³⁷⁴ Of the 13 fatalities, 4 involved workers who died on their first day on a new job or after returning from time away from the job; 9 involved deaths in the first three days on a new job or after returning to work.³⁷⁵

Beyond the obvious reasons why acclimatization is important, it has particular significance in the correctional context for at least two reasons. First, symptoms of even mild heat illness, such as fatigue and weakness, can diminish correctional officers' ability to perform their duties effectively, which can in turn compromise security. Second, numerous conditions can make acclimation difficult to achieve, including high population density, widespread use of prescription medications that interfere with thermoregulation, high incidence of chronic health problems that increase susceptibility to heat, and a sometimes limited availability of cooler housing assignments.

Correctional health staff should closely monitor inmates and correctional officers who are new to a hotter facility while they adjust and should instruct them in recognizing and acting on the warning signs of heat stress. To the extent possible, these inmates and COs should remain in areas with more moderate temperatures until they have acclimatized. Although full acclimatization can take a couple of weeks, measurable acclimatization can be obvious within

³⁷³ See *Acclimatizing Workers*, OSHA, [osha.gov/SLTC/heatillness/heat_index/acclimatizing_workers.html](https://www.osha.gov/SLTC/heatillness/heat_index/acclimatizing_workers.html) (last visited Aug. 1, 2015); see also Zhe Tian et al., *Experimental Study on Physiological and Psychological Effects of Heat Acclimatization in Extreme Hot Environments*, 46 BUILDING & ENV'T. 2033 (2011) (reporting results of experimental study demonstrating that effects of heat acclimatization are significant and that acclimatization training can improve adaptability of human body to extremely hot environments). It is important to note that there has been scant research on the extent to which elderly people or those with chronic medical conditions are capable of acclimatizing to heat. See Shakoor Hajat et al., *Health Effects of Hot Weather: From Awareness of Risk Factors to Effective Health Protection*, 375 LANCET 856, 861 (2010).

³⁷⁴ Sheila Arbury et al., *Heat Illness and Death Among Workers—United States, 2012–2103*, 63 MORBIDITY & MORTALITY WKLY. REP. 661, 664 (2014)), [cdc.gov/mmwr/pdf/wk/mm6331.pdf](https://www.cdc.gov/mmwr/pdf/wk/mm6331.pdf).

³⁷⁵ See *id.* at 663 tbl.

only a few days of exposure to heat.³⁷⁶ New correctional officers and those returning to work after an absence of more than a week should begin with reduced hours and work up to a full shift over the course of a work week.³⁷⁷ Inmates and correctional officers alike should have access to abundant drinking water and ice and should be reminded to remain hydrated. Inmates should minimize exercise and take frequent cool showers until they become acclimatized. Correctional officers should take frequent rest breaks and spend time in air-conditioned areas where available. The National Institute for Occupational Safety and Health and the Occupational Safety and Health Administration both provide guidelines to help employers acclimatize their employees to hot work environments and minimize the risk to employee health posed by heat.³⁷⁸

4.3.2.2 Segregate Inmates Based on Heat Sensitivity

Another straightforward adaptation option is to assess individual inmates' vulnerability to heat stress and assign housing based on those assessments. While temperature and humidity in all housing areas should be kept at healthy levels, a department or facility that is unable yet to guarantee that level of care for all inmates should at least ensure that areas that hold the most-susceptible inmates have adequate climate controls. As a short-term measure for departments that have only limited housing with adequate climate control, relocating more vulnerable inmates to separate housing units, where they could be more closely observed and more easily assisted when temperatures spike, would allow departments to minimize risk while they bring deficient facilities or housing tiers up to par. For the long term, prophylactically identifying inmates who are at greater risk of heat-related illness and assigning them to cooler housing would make it easier to anticipate, minimize, and respond effectively to individual cases of heat stress.

³⁷⁶ See *id.* at 664; Shakoor Hajat et al., *Health Effects of Hot Weather: From Awareness of Risk Factors to Effective Health Protection*, 375 LANCET 856, 860 (2010).

³⁷⁷ See Sheila Arbury et al., *Heat Illness and Death Among Workers: United States, 2012–2013*, 63 MORBIDITY & MORTALITY WKLY. REP. 661, 664 (2014), cdc.gov/mmwr/pdf/wk/mm6331.pdf (recommending 20 percent exposure to hot work environment on first day and additional 20 percent on subsequent days for workers of all types).

³⁷⁸ See *Heat Stress*, CDC (June 24, 2014), cdc.gov/niosh/topics/heatstress; OSHA's Campaign to Prevent Heat Illness in Outdoor Workers, OSHA, osha.gov/SLTC/heatillness/edresources.html (last visited Aug. 1, 2015).

Some segregation of inmates according to their tolerance for heat already takes place. In one recent case, a federal court ordered that pretrial detainees who take psychotropic drugs be kept in housing where temperatures do not exceed 85°F.³⁷⁹ Maryland uses a “heat stratification” process in making housing assignments.³⁸⁰ Individuals admitted to a Maryland Department of Public Safety and Correctional Services facility receive a medical intake evaluation, in part to “[i]dentify at an earlier time arrestees/detainees/inmates who may be at risk for heat related health issues if placed in non–air conditioned environments.”³⁸¹ All inmates initially receive one of three “heat risk codes” and are then periodically reevaluated to determine whether that code should be changed based on factors such as chronic medical conditions and medication use.³⁸² Housing assignments are based, in part, on the individual inmate’s heat-risk code.³⁸³

More than half the states now have some geriatric facilities where older inmates are cared for while still confined.³⁸⁴ Departments should make it a priority to ensure that geriatric housing be kept at appropriate temperatures.

4.3.3 Phase Out the Most Vulnerable Facilities

Correctional departments close facilities as their needs change, as buildings deteriorate, and as designs and the penological theories that inspired them become obsolete. The decision to shut an individual facility involves a variety of considerations, including the age and condition of the facility, characteristics such as its security level, and adverse local economic impacts and staff layoffs from a closure. The degree to which a given facility is well-adapted to the impacts of climate change should be among those factors so that facility closures advance adaptation efforts rather than setting them back.

³⁷⁹ See *Graves v. Arpaio*, 623 F.3d 1043, 1049 (9th Cir. 2010) (affirming district court order).

³⁸⁰ See MD. OFFICE OF INMATE HEALTH SERVS., MED. EVALS. MANUAL, ch. 1, sec. 1A, pt. I, § II(D)(2) (2009).

³⁸¹ MD. OFFICE OF INMATE HEALTH SERVS. & OFFICE OF TREATMENT SERVS., MED. EVALS. MANUAL, ch. 1, sec. 1A, pt. I, § I (2009).

³⁸² *Id.* § II(D)(2).

³⁸³ See *id.*

³⁸⁴ See RON H. ADAY, AGING PRISONERS: CRISIS IN AMERICAN CORRECTIONS 152 (2003). Examples include State Park Correctional Center in South Carolina, McCain Correctional Hospital in North Carolina, SCI Laurel Highlands in Pennsylvania, Hocking CF in Ohio, and Estelle Unit in Texas. See *id.* at 159–62, 209.

In the process of assessing their vulnerabilities to the impacts of climate change, correctional departments will find that some facilities are already well-adapted, others can be retrofitted at reasonable cost, and still others would be too difficult or costly to cool or are at risk of inundation from rising sea levels and storm surges. Ultimately, facilities that cannot reasonably be made suitable for future climate conditions will have to be phased out. If inmate populations fall significantly, correctional departments may find it unnecessary to replace phased-out vulnerable facilities. Where replacement facilities are needed, departments will have the opportunity to build resilient facilities that are well-adapted to meet foreseeable climate impacts during their expected useful lifetimes.

4.3.4 Retrofit Adaptable Facilities by Maximizing Passive Cooling

Many cost-effective options exist for modifying existing buildings to make them better suited for hot weather. Installing or upgrading mechanical air-conditioning systems is the most familiar means of controlling indoor temperatures during summertime, but air conditioning should not be the first option that correctional departments consider when deciding how to improve their facilities' cooling capacity. Air conditioning is expensive, both to install and to operate, and even the most efficient systems consume significant amounts of energy, which means more of the carbon emissions that are causing climate change in the first place. Correctional departments should look first to passive cooling options, including cool roofs, green roofs and walls, and awnings. Even where passive cooling alone will be inadequate, it will reduce the need for air conditioning.

Long before human beings used air conditioners or, for that matter, electric fans, they took advantage of passive cooling techniques to create healthy indoor environments without using energy. Correctional departments can capitalize on both ancient knowledge and modern innovations to cool their facilities. A variety of incentives may help defray the cost of installing passive-cooling options.³⁸⁵

³⁸⁵ See, e.g., *Database of State Incentives for Renewables & Efficiency*, N.C. CLEAN ENERGY TECH. CENTER, dsireusa.org (last visited Aug. 1, 2015); CATALOG OF FED. DOMESTIC ASSISTANCE, cfda.gov (last visited Aug. 1, 2015); LEED, U.S. GREEN BUILDING COUNCIL, usgbc.org/leed (last visited Aug. 1, 2015).

In the correctional context, retrofit work on building exteriors offers significant advantages because it does not require displacing inmate populations and minimizes security complications. Roofs are a prime target for passive-cooling retrofits.³⁸⁶

Cool roofs, which are typically though not always white or light gray, are a cost-effective and proven form of passive cooling.³⁸⁷ They work by reflecting solar energy away from a building and by readily giving up (or emitting) the heat that they do absorb from the sun. Their high reflectivity and high emissivity allow them to remain about 50 to 60°F cooler than traditional roofs.³⁸⁸ At their warmest, they can get to 20°F above air temperature, in sharp contrast to traditional roofs, which can exceed air temperature by up to 85°F.³⁸⁹

Because cool roofs allow less heat to reach building interiors, indoor spaces remain cooler. That can translate into significant public health benefits where buildings lack mechanical air conditioning.³⁹⁰ Prime candidates for cool roofs include buildings with existing cooling deficiencies, buildings whose roof surfaces make up a quarter or more of the total exterior

³⁸⁶ The Onondaga County Department of Correction is near the end of a multi-year comparative study of the effects on energy consumption and stormwater management of different roof retrofit options at its Jamesville, NY, facility. In 2009, four different roofs were installed on top of four inches of foam insulation: a black rubber conventional roof, an extensive green roof, and two white thermoplastic polyolefin cool roofs, one over an extra four inches of insulation. Onondaga is a central New York county where winters are more challenging than summers, so the study has not focused on roof performance during maximum summertime temperatures. Nevertheless, it will be of interest to any correctional department considering roof retrofits as part of a climate-change adaptation strategy. See James R. Kirby, *Green, Greener, Greenest?*, ROOFING CONTRACTOR (June 4, 2013), roofingcontractor.com/articles/89570-green-greener-greenest; ASHLEY-MCGRAW ARCHITECTS, PC, & CDH ENERGY CORP., FINAL REPORT: COMPARATIVE ROOF TESTING AT ONONDAGA COUNTY CORRECTIONAL FACILITY (2011), cdhenergy.com/presentations/ashley_roof_final_report-Oct_2011.pdf; see also *Coalition Extending Research Project on Sustainable Roofing*, CONSTRUCTION SPECIFIER (Dec. 19, 2014), constructionspecifier.com/coalition-extending-research-project-on-sustainable-roofing (reporting extension of research through 2015).

³⁸⁷ A 2008 EPA publication, *Reducing Urban Heat Islands: Compendium of Strategies*, available at epa.gov/heatisland/resources/compendium.htm, offers an excellent primer on cool roofs and other passive cooling techniques. In addition to providing clear explanations of different techniques and how they work, it lists useful resources for conducting cost-benefit analyses and other calculations.

³⁸⁸ See CLIMATE PROT. P'SHIP DIV., OFFICE OF ATMOSPHERIC PROGRAMS, EPA, REDUCING URBAN HEAT ISLANDS: COMPENDIUM OF STRATEGIES: COOL ROOFS 1 (2008), epa.gov/heatisland/resources/pdf/CoolRoofsCompendium.pdf.

³⁸⁹ See *id.* at 4.

³⁹⁰ See *id.* at 11 (reporting on results of Philadelphia program that provided cool roofs and insulation for residential buildings that lacked air conditioning).

surface, and buildings where sun damage already causes traditional roofing materials to deteriorate.³⁹¹ Installing exterior insulation at the same time as cool roofing can provide additional benefits.³⁹²

A variety of cool roofing materials are available. For low-sloped rooftops, which are the most common sites for cool roofs, the main options are coatings and single-ply membranes.³⁹³ Options for steep-sloped roofs include cool shingles, tiles, and metal roofing.³⁹⁴ Since cool roofs do not impose additional loads and since all buildings eventually need new roofs, cool roofs are an ideal option for retrofitting.

Growing a layer of vegetation on a rooftop provides passive cooling as well as environmental benefits. Where structural considerations make such green roofs impractical, green walls—typically trellises with climbing plants—can provide similar benefits.³⁹⁵ Both approaches take advantage of the shade that plants provide as well as evapotranspiration, the cooling effect of evaporation from soil (and from foliage after a rainfall) combined with the movement of water through a plant, up from its roots and out through its leaves, known as transpiration.³⁹⁶ Although they are darker than cool roofs and reflect less solar energy, green roofs can be cooler still, both below the temperature of the surrounding air and up to 90°F cooler than conventional rooftops.³⁹⁷

For roof retrofits, the most appropriate model is the extensive (or low-profile) green roof, which is relatively light and simple, populated by hardy, rugged, shallow-rooted plants that spread quickly and require little maintenance once established, such as sedums.³⁹⁸ A

³⁹¹ See *id.* at 20.

³⁹² See *id.*

³⁹³ See *id.* at 5–6.

³⁹⁴ See *id.* at 6–7.

³⁹⁵ One study found that growing vines on a wall cut the temperature of the wall by up to 36°F. See *id.* at 2.

³⁹⁶ See CLIMATE PROT. P'SHIP DIV., OFFICE OF ATMOSPHERIC PROGRAMS, EPA, REDUCING URBAN HEAT ISLANDS: COMPENDIUM OF STRATEGIES: GREEN ROOFS 2–3 (2008), [epa.gov/heatisland/resources/pdf/GreenRoofsCompendium.pdf](https://www.epa.gov/heatisland/resources/pdf/GreenRoofsCompendium.pdf).

³⁹⁷ See *id.* at 1.

³⁹⁸ See *id.* at 4, 14. The other main model is the intensive green roof, also called high- or deep-profile, which is more akin to a garden or park. See *id.*

lightweight, engineered growing medium is used to minimize the load on the roof.³⁹⁹ The multilayer design ensures adequate drainage, provides insulation, and protects the building below from leaks.⁴⁰⁰ Extensive green roofs can have fairly significant pitches, as much as a 30° or greater slope.⁴⁰¹

Green roofs reduce indoor temperatures and can help with stormwater management.⁴⁰² While green roofs have higher initial costs than cool roofs, they have longer expected lives, so their lifetime cost may be no higher than that of conventional or cool roofs.⁴⁰³ The viability and cost effectiveness of retrofitting a building with a green roof largely depends on how the existing roof was built. Roofs with concrete structural systems lend themselves to green roof retrofits while those with steel decks present more difficulty and cost.⁴⁰⁴ Needless to say, such considerations do not come into play for green walls, which do not add any appreciable structural load.

Both cool and green roofs can be augmented with photovoltaic systems to generate electricity. The roof of the Santa Rita Jail in Alameda County, California, combines an extensive photovoltaic array with a cool roof.⁴⁰⁵ The shade from the raised panels and the 65-percent reflectivity of the cool roof membrane lowers peak roof temperatures by 50°F, while the supply of solar energy cuts almost a third off the facility's electric bill.⁴⁰⁶

Green walls are not the only passive cooling option for retrofits that does not require roof modifications. Windows can be a significant source of heat gain if they are not protected from direct sunlight. Shading windows with awnings is a traditional, highly cost-effective tactic for beating summer heat. Indeed, when the court ordered the collection of temperature data on Louisiana's death row in *Ball v. LeBlanc*, the facility's warden had awnings installed over the

³⁹⁹ See *id.* at 15.

⁴⁰⁰ See *id.* at 15–16.

⁴⁰¹ See *id.* at 4.

⁴⁰² See *id.* at 8.

⁴⁰³ See *id.* at 10.

⁴⁰⁴ See *id.* at 13.

⁴⁰⁵ See CTY. OF ALAMEDA, SMART ENERGY STRATEGIES: INTEGRATING SOLAR ELECTRIC GENERATION AND ENERGY EFFICIENCY: SANTA RITA JAIL CASE STUDY 7 (2002), acgov.org/srjp/caseStudy.pdf.

⁴⁰⁶ See *id.* at 2, 7.

windows of two housing tiers in order to bring down temperatures.⁴⁰⁷ Awnings over south-facing windows can cut heat gain by up to 65 percent and awnings over west-facing windows can reduce heat gain by 77 percent.⁴⁰⁸ High-reflectivity window films can also be applied to existing windows to deflect sunlight.⁴⁰⁹

4.3.5 Build New Sustainable, Adapted, and Resilient Facilities

Compared to the complexity of adapting existing correctional facilities to the coming higher temperatures of this century and the next, ensuring that new facilities are built to be sustainable and resilient under reasonably foreseeable future conditions is relatively straightforward. Simply locating new facilities in areas less prone to climate impacts will improve resiliency.⁴¹⁰ The range of innovative and effective designs, materials, and technologies will only broaden as sustainable, climate-adapted construction becomes increasingly commonplace. Opportunities to share best practices and create model facilities will abound.

It is imperative, however, that correctional departments take the foreseeable impacts of climate change into account in all current and future construction projects. One way to do this is to incorporate likely future climate conditions in environmental impact analyses.

The National Environmental Policy Act of 1969 (NEPA) requires federal agencies to consider the environmental impact of proposed federal actions and to prepare environmental impact statements before undertaking actions that are likely to have a significant effect on the environment.⁴¹¹ Many states and some localities have equivalent statutes that mandate

⁴⁰⁷ See *Ball v. LeBlanc*, 300 F.R.D. 270, 275 (M.D. La. 2013).

⁴⁰⁸ *Energy Efficient Window Treatments*, ENERGY.GOV (Sept. 25, 2012, 9:04 AM), energy.gov/energysaver/articles/energy-efficient-window-treatments.

⁴⁰⁹ See *id.*

⁴¹⁰ In some jurisdictions, departments are already required to take climate impacts into account when siting new facilities. See, e.g., Md. Exec. Ord. 01.01.2012.29: Climate Change and “Coast Smart” Construction, § B (Dec. 28, 2012) (requiring state agencies seeking funding for new construction, reconstruction, or rehabilitation of infrastructure to “consider the risk of coastal flooding and sea level rise to the project” and recommending that they “site and design State structures to avoid or minimize associated impacts”); Cal. Exec. Ord. S-13-08, § 5 (Nov. 14, 2008) (requiring state agencies planning construction in coastal areas to “consider a range of sea level rise scenarios for the years 2050 and 2100 in order to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise”).

⁴¹¹ See National Environmental Policy Act of 1969 § 102, 42 U.S.C. § 4332 (2015).

environmental assessments for projects that require the action of a public agency.⁴¹² Because changes in the climate during a project's lifespan may require adaptations that have environmental impacts—such as increased water consumption as temperatures rise—foreseeable future conditions should be taken into account in environmental impact analyses.

In December 2014, the Council on Environmental Quality published a draft guidance for federal departments and agencies on how to include climate-change considerations in their NEPA reviews.⁴¹³ The draft guidance calls on federal agencies to “take into account the ways in which a changing climate over the life of the proposed project may alter the overall environmental implications” of agency actions.⁴¹⁴ To envision the “expected future state of the environment” during the “expected lifespan of the proposed project,” the guidance directs federal agencies to use “available climate change information, including observations, interpretive assessments, predictive modeling, scenarios, and other empirical evidence.”⁴¹⁵ Considering future climate conditions will “inform[] decisions on whether to proceed with and how to design the proposed action” and will “ultimately enabl[e] the selection of smarter, more resilient actions.”⁴¹⁶

A recent environmental impact statement issued in connection with a proposed new federal correctional institution and prison camp at Leavenworth, Kansas, acknowledged the need to consider the impacts of climate change on the project. However, its discussion of the issue was

⁴¹² *E.g.*, California Environmental Quality Act, CAL. PUB. RES. CODE §§ 21000–21177 (West 2015); CONN. GEN. STAT. §§ 22a-1 to -1h (2014); D.C. CODE §§ 8-109.01–.11 (2015); Environmental Policy Act, GA. CODE ANN. §§ 12-16-1 to -8 (2015); Hawaii Environmental Policy Act, HAW. REV. STAT. §§ 343-1 to -8 (2015); IND. CODE §§ 13-12-4-1 to -10 (2015); Maryland Environmental Policy Act, MD. CODE ANN., NAT. RES. §§ 1-301 to -305 (West 2015); MASS. GEN. LAWS ch. 30, §§ 61–62I (2015); Minnesota Environmental Policy Act, MINN. STAT. §§ 116D.01–.06 (2015); State Environmental Quality Review Act, N.Y. ENVTL. CONSERV. LAW §§ 8-0101 to 8-0117 (2015); North Carolina Environmental Policy Act of 1971, N.C. GEN. STAT. §§ 113A-1 to -13 (2015); South Dakota Environmental Policy Act, S.D. CODIFIED LAWS §§ 34A-9-1 to -13 (2014); VA. CODE ANN. §§ 10.1-1188 to -1192 (2014); State Environmental Policy Act, WASH. REV. CODE §§ 43.21C.010–.900 (2015); Wisconsin Environmental Policy Act, WIS. STAT. § 1.11 (2015); *see also* N.J. EXEC ORDER 215 (1989) (requiring environmental review of projects in New Jersey).

⁴¹³ Revised Draft Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews, 79 Fed. Reg. 77,802 (Dec. 24, 2014).

⁴¹⁴ *Id.* at 77,825.

⁴¹⁵ *Id.* at 77,828.

⁴¹⁶ *Id.* at 77,828–29.

only cursory. After noting that global warming of 3 to 8°F is expected over the next 40 to 50 years, the study stated: “It is expected that the proposed project will be unaffected by a potential climatic change of this magnitude. Furthermore, . . . the proposed project would not be affected by changes in sea levels.”⁴¹⁷ The study did not explain the basis for these conclusions.

States with analogues to NEPA should require environmental impact studies to encompass analyses of the implications of foreseeable climate changes for all proposed projects, in order to encourage sustainability and resiliency. As construction of correctional facilities always involves the action of public agencies, such protocols for impact analyses would provide a formal structure for designing and building well-adapted prisons and jails. With appropriate planning there is no reason for correctional officers or inmates to suffer heat stress in a correctional facility built from this point forward, regardless of how much temperatures rise due to climate change.

4.3.6 Require Adequate Cooling of Private Facilities

Correctional departments that make use of private facilities to house inmates should ensure that those facilities have adequate cooling capacity to safeguard inmates’ health. Contracts with private entities that operate jails or prisons should include provisions requiring that temperature and humidity in all interior areas be kept within safe ranges. Where private operators cannot guarantee that inmates and staff will be protected from excessive heat, their contracts should not be renewed. Designs for new private facilities should incorporate energy-efficient and passive cooling features as necessary to guarantee sufficient cooling throughout the expected lifespan of the facilities, taking into account projections for severe heat.

4.3.7 Collaborate and Cooperate

Climate change will test today’s generation of correctional leaders in ways that few likely imagined when they entered the field. Adapting their operations and facilities to the changing climate will take time, resources, creativity, and an ability to make and implement decisions based on only partial information, since postponing action until the precise extent of

⁴¹⁷ LOUIS BERGER, FINAL ENVIRONMENTAL IMPACT STATEMENT, PROPOSED FEDERAL CORRECTIONAL INSTITUTION AND FEDERAL PRISON CAMP, LEAVENWORTH, KANSAS III-97 to -98 (April 2015) (prepared by Louis Berger for Federal Bureau of Prisons).

temperature rise and other impacts becomes clear is dangerous and unwise. Correctional leaders should collaborate and cooperate with each other, with stakeholders, and with independent public and private entities, sharing best practices and learning from one another's successes and disappointments. Adaptation will not be easy but it is still eminently feasible.

4.4 Adaptation Planning by the Federal Bureau of Prisons

The Federal Bureau of Prisons (BOP), part of the US Department of Justice (DOJ), is included in that department's *Climate Change Adaptation Plan*, produced in compliance with executive orders.⁴¹⁸ Like all federal agencies, DOJ has been guided in its efforts by materials issued by the Council on Environmental Quality.⁴¹⁹ Although the DOJ plan covers the department as a whole, some of its contents explicitly mention the BOP.

DOJ began its adaptation work by designating a senior official to be responsible for the effort.⁴²⁰ It then evaluated the likely impacts of climate change on its assets and infrastructure and determined that the assets at greatest risk were its buildings, utilities infrastructure, and personnel.⁴²¹ It found that the greatest threats to those assets are from severe weather and flooding, followed by drought and high temperatures, and then sea-level rise.⁴²² The vulnerabilities of DOJ's high-risk assets fell into four broad categories: physical damage to buildings and utilities infrastructure; human health impacts (including prisoners' vulnerability to "heat-related health impacts"); disruption of operations resulting from potential unrest and

⁴¹⁸ See Exec. Ord. 13514: Federal Leadership in Environmental, Energy, and Economic Performance, 74 Fed. Reg. 52,117 (Oct. 8, 2009) (superseded by Exec. Ord. 13693: Planning for Federal Sustainability in the Next Decade, 80 Fed. Reg. 15,871 (Mar. 25, 2015)); Exec. Ord. 13653: Preparing the United States for the Impacts of Climate Change, 78 Fed. Reg. 66,819 (Nov. 6, 2013).

⁴¹⁹ See COUNCIL ON ENVTL. QUALITY, FEDERAL AGENCY CLIMATE CHANGE ADAPTATION PLANNING: IMPLEMENTING INSTRUCTIONS (Mar. 4, 2011), whitehouse.gov/sites/default/files/microsites/ceq/adaptation_final_implementing_instructions_3_3.pdf; COUNCIL ON ENVTL. QUALITY, FEDERAL AGENCY CLIMATE CHANGE ADAPTATION PLANNING: SUPPORT DOCUMENT (Mar. 4, 2011), whitehouse.gov/sites/default/files/microsites/ceq/adaptation_support_document_3_3.pdf. Adaptation planners in correctional departments will find the *Support Document* particularly useful.

⁴²⁰ DEP'T OF JUSTICE, CLIMATE CHANGE ADAPTATION PLAN 1-1 (2014), justice.gov/sites/default/files/jmd/pages/attachments/2014/10/30/doj-climate-change-adaptation-plan.pdf.

⁴²¹ *Id.* at 2-2.

⁴²² *Id.*

increased violence among those affected by climate change; and increased fiscal needs.⁴²³ The plan notes that “[m]ore detailed information on agency vulnerability cannot be published within this Adaptation Plan because it is considered sensitive to the DOJ mission.”⁴²⁴

To manage climate risks and build resilience, the *Adaptation Plan* identifies programmatic activities for DOJ to implement under existing programs and initiatives.⁴²⁵ These include demonstrating commitment to adaptation efforts through internal communications and policies and dissemination of up-to-date information; integrating climate-change preparedness into agency policies, programs, operations, and budgeting; collaborating, sharing information, and coordinating preparedness planning with other public-sector partners; examining capital improvement plans for ways to implement adaptive designs; and periodically reviewing and updating adaptation efforts to reflect both current science and lessons learned.⁴²⁶

Beyond these programmatic activities, the *Adaptation Plan* enumerates a set of actions that “require a higher level of effort that is beyond the scope of existing programs and initiatives.”⁴²⁷ Five of these actions, intended to increase understanding of the risks and opportunities associated with climate change, “include a combination of detailed vulnerability assessments; monitoring; scientific, social, economic, and behavioral research; exploration of climate change scenarios; and studies of specific geographic areas, programs, and operations.”⁴²⁸ Noting that “the BOP must ensure that prisons continue to function in the case of energy disruption, heat waves, drought, or coastal storm impacts,” the *Adaptation Plan* emphasizes the need to identify the department’s highest-risk assets with a greater degree of detail.⁴²⁹ The plan also highlights

⁴²³ *Id.*

⁴²⁴ *Id.*

⁴²⁵ *See id.* at 2-2 to -5.

⁴²⁶ *See id.*

⁴²⁷ *See id.* at 2-3, 2-5, 2-7.

⁴²⁸ *Id.* at 2-5. The five “actions to understand” are: “Identify High Risk Assets,” “Summarize Current Climate Resiliency Practices and Lessons Learned by Locality,” “Identify Locations and Scenarios Prone to Climate-Related Health Impacts,” “Identify Locations and Scenarios Prone to Climate-Related Population Unrest,” and “Assess Budgetary Implications of Climate-Related Impacts.” *Id.* at 2-6 to -7. The plan’s Appendix A provides detailed explanations of all five actions.

⁴²⁹ *Id.* at 2-6.

“the spread of a climate-related illness throughout the BOP inmate population” as a health impact that would have budgetary implications that must be better understood.⁴³⁰

In addition to the five actions to improve understanding, the plan delineates five actions to address climate-change risks and opportunities, “including pilot activities, modifications to existing programs, formal integration and dissemination of preparedness policies, sharing of best practices, and collaboration.”⁴³¹ As one example of why the agency has committed to integrating adaptation into its investment decisions, the plan notes that “if a facility installs a roof in a southwestern region of the country without consideration of the projected increased incidence of heat waves, the investment may not perform as planned and the roof may have to be replaced or repaired ahead of schedule, resulting in additional financial outlay.”⁴³²

The plan also outlines some steps that DOJ will take “to ensure that climate related risks are considered . . . in real property acquisition and leasing decisions,” including determining whether “infrastructure is built to withstand projected extreme temperatures.”⁴³³ One challenge for the BOP that the plan identifies is the bureau’s limited control over where its facilities are located, since Congress, not the BOP, decides where to site federal prisons.⁴³⁴ Additional provisions in the plan commit DOJ to take actions to “remove barriers to climate resilient investment, reform policies and funding programs that increase climate vulnerabilities, and incentivize climate-resilient investment by states, local communities, and tribes,” including through DOJ grants.⁴³⁵

⁴³⁰ *Id.* at 2-7.

⁴³¹ *Id.* The five “actions to address” are: “Increase Adaptive Capacity of Buildings, Utilities Infrastructure, and Assets,” “Increase Adaptive Capacity of Personnel,” “Anticipate and Avoid Disruption to Operations,” “Anticipate and Avoid Budgetary Impacts,” and “Integrate Adaptation into Funding, Investment, and Purchasing Programs.” *Id.* at 2-7 to -8. The plan’s Appendix B provides detailed explanations of all five.

⁴³² *Id.* at 2-8.

⁴³³ *Id.* at 2-10.

⁴³⁴ *Id.*

⁴³⁵ *Id.* at 3-1 to -2.

Like all adaptation plans, the DOJ plan is explicitly a work in progress, subject to ongoing revision as adaptation efforts progress and as climate science develops.⁴³⁶ It also recognizes the critical importance of approaching adaptation as a collaborative effort, involving information sharing, participation in interagency programs, and coordination with similar efforts by state, local, tribal, and territorial partners.⁴³⁷ As they begin their own adaptation work, therefore, correctional departments across the country will benefit from building relationships with the adaptation planners at the BOP. Although DOJ's published *Climate Change Adaptation Plan* offers few details to the general public about adaptation efforts at the BOP in particular, more complete and valuable information is undoubtedly available to fellow correctional departments.

5 CONCLUSION

Much remains unknown about how climate change will transform our nation and world in the coming decades. That it will have transformative effects is beyond reasonable doubt, though many remain unable to face the daunting tests it poses for us all, seizing upon uncertainties in the science in the vain hope that it will all prove to have been a vast misunderstanding. Such resistance to frightening information is understandable but it is maladaptive and dangerous, as it risks squandering opportunities to minimize the harmful impacts of climate change. Our best chance for avoiding the worst of what climate change may bring lies in the opposite response: mitigating the causes of climate change and adapting to its inevitable impacts.

This paper has focused on the implications of rising temperatures for the correctional sector. Unfortunately, climate change promises much more than just greater heat. Effective adaptation will require correctional departments to assess the full range of likely impacts of climate change and to formulate holistic and coherent strategies to address all those impacts. For some departments, temperatures may not be as significant a concern as flooding from rising sea levels or more destructive storm surges. Adaptation will be more difficult for some departments than

⁴³⁶ See *id.* at 2-1 (committing DOJ to "continued monitoring to assess the success of the plan, and mechanisms to periodically review and update the plan").

⁴³⁷ See *id.* at 2-5.

for others. The first step for all departments, however, is to acknowledge the importance of assessing their vulnerabilities and beginning to take adaptive measures without delay.

In gauging their vulnerabilities and setting adaptation priorities, correctional departments should consider not only the direct impacts of rising temperatures but also indirect impacts such as greater risks of wildfires and drought, increased burdens on the electric grid, and growing pressures on food and water supplies. Impacts beyond heat include coastal and river flooding, more extreme weather of all kinds, and infestations of insects and other vermin, some transmitting disease. Damage to infrastructure, reduced agricultural yields, diminishing supplies of potable water, public-health crises, and other national impacts will impose significant costs, and correctional departments are likely to find themselves in tough competition with other divisions of government for limited public funds. Those correctional departments that make an early start will be at an advantage in adapting to these and other impacts.

Beyond getting started without delay, one of the most important steps that correctional departments can take is to collaborate both with one another and with other public agencies. Adult corrections will find the most common ground with juvenile justice. Other public agencies that share common features with corrections include immigration, public health, law enforcement, and the military.

At this juncture, climate change is not likely to be high on the agenda of most correctional administrators. One reason for this is that those who are focused on climate change have almost completely disregarded the correctional sector. Mentions of corrections in the literature on climate change are virtually nonexistent. Just as the correctional sector must come to terms with the challenges of climate change, those outside corrections who are already devoted to meeting those challenges must expand their vision of the public sector to include corrections, juvenile justice, and other essential public agencies that have been left out of the discussion. Corrections should not—and will not—have to go it alone.

APPENDIX:

POLICIES AND REGULATIONS CONCERNING HEAT AND CLIMATE CONTROL IN CORRECTIONS

Federal

U.S. DEP'T OF JUST., FED. BUREAU OF PRISONS, PROGRAM STMT. 8041.03, § 2.2.2 (1997)

[for Federal Prison Industries facilities at BOP institutions]

HVAC systems shall be designed to maintain a light manufacturing environment, while remaining compatible with the institution's systems. Air conditioning, and/or evaporative cooling (depending on local environmental conditions), shall be included in the design for the main production floor. All factory support and administrative areas shall be air-conditioned. The temperature range shall be similar to other areas within the institution. The factory shall be provided with its own air handling unit to allow for localized temperature control and ventilation. Heating shall be provided through this air handling unit.

Alabama

ALA. DEP'T OF CORR., ADMIN. REG. 435, § V(C)(3)(a)(2) (2006)

Inmates assigned to Protective Custody who are taking prescribed psychotropic medication shall comply with the requirements of AR 619, *Psychotropic Medication and Heat*, [and] when the temperature in the housing unit reaches 90 degrees Fahrenheit, the following actions shall be taken:

- (a) Record the temperatures on ADOC Form MH-026, *Housing Unit Temperature Log*.
- (b) Increased ventilation of the area through utilization of fans to improve airflow and reduce cell temperatures to less than 90 degrees.
- (c) Provision of increased fluids and ice.
- (d) Allowance of additional showers to provide cooling.

(e) Recommend to the Warden to temporarily transfer the inmate to an area of the institution that is more compatible with the inmate's clinical status.

ALA. DEP'T OF CORR., ADMIN. REG. 419, change no. 1 (2005)

[§ I:] ADOC will ensure inmates prescribed psychotropic medication with side effects that may cause sensitivity to sustained elevated temperatures and/or direct sunlight are protected from these potential health risks.

[§ II:] Efforts will be taken to ensure that inmates receiving certain first generation antipsychotics, such as Mellaril, Thorazine, and Prolixin, as well as mood stabilizers, such as Lithium, are not exposed to sustained elevated temperatures or extended periods of direct sunlight. Individuals on this type of medication have increased sensitivity to sunlight and are at risk for heat induced syndromes, such as heat stroke, hyperthermia, dehydration, and heat prostration. This policy does not effect most atypical antipsychotics, such as Geodon and Risperdal, or antidepressants such as Prozac, Effexor, Pamelor, Paxil, and Zoloft.

ALA. DEP'T OF CORR., ADMIN. REG. 419 (2005)

[§ IV:] A. Psychiatrists/Nurse Practitioners are responsible to inform inmates prescribed psychotropic medication of potential risks when they are exposed to heat/sun for prolonged periods.

B. The mental health nurses at each institution will conduct individual or group education sessions before each summer season to remind inmates prescribed psychotropic medication of the risks involved with elevated temperature and direct sunlight.

C. Correctional Officers assigned to segregation units where inmates taking psychotropic medication are housed are responsible for:

1. Monitoring and recording of temperatures in segregation.
2. Initiating measures to reduce temperatures in segregation.

D. The Director of Treatment and Wardens will ensure that measures to reduce sun/heat exposure risks for inmates taking psychotropic medication are initiated and maintained at all ADOC institutions.

E. The Supervising Psychologist is responsible to remind the institutional Wardens of the risks of elevated temperature on inmates prescribed psychotropic medication before each summer season. The Supervising Psychologist is also responsible to monitor that measures to minimize these risks are completed at each institution. The ADOC Director of Treatment will be consulted for assistance when the Supervising Psychologist experiences difficulties in achieving compliance at a specific institution.

[§ V:] A. Mental Health Nursing Staff will advise inmates prescribed psychotropic medication of the potential risks associated with exposure to sustained elevated temperatures and/or direct sunlight and offer the following precautionary measures:

1. Wear protective clothing and sunscreen when in direct sunlight.
2. Limit activities/work assignments that are physically exhausting and expose the inmate to direct sunlight.
3. Consume eight to twelve glasses of liquid per day to prevent dehydration.

B. The Supervising Psychologist will provide the Institution's SEG Commander/Captain with an updated weekly list of inmates taking psychotropic medication.

C. Correctional Officers in segregation units that house inmates prescribed psychotropic medication will:

1. Regularly monitor the temperature (at least three times per day) when the outside temperature is higher than 80 degrees Fahrenheit.
2. Record the temperatures on ADOC Form MH-026, Housing Unit Temperature Log.
3. Take the following measures if the cell temperature exceeds 90 degrees Fahrenheit:
 - a. Notify the SEG Commander/Captain.
 - b. Use fans to increase ventilation and airflow.

- c. Provide increased amounts of fluids and ice.
- d. Allow additional showers to provide cooling.
- 4. If the above efforts fail to reduce the cell temperature, Officers will:
 - a. Notify the Warden.
 - b. Consider temporary transfer to a cooler area in the institution.
- D. Inmates taking psychotropic medication will be provided sunscreen if both of the following apply:
 - 1. They are required to be in direct sunlight for longer than one hour.
 - 2. They are unable to afford the purchase of sunscreen.

Alaska

ALASKA DEP'T OF CORR., POLICIES & PROCEDURES § 801.03(5)(C) (2012)

Facility staff shall strive to maintain ventilation and temperatures in each facility indoor living and work areas appropriate to summer and winter comfort zones. When feasible, temperatures shall be maintained between 65 and 80 degrees Fahrenheit.

Arizona

ARIZ. DEP'T OF CORR., DEP'T ORDER 717 (2009)

[.02, § 1.4.10] [Service dog (SD) handlers at offender operations facilities] shall ensure that the SD is properly protected from heat-related conditions . . .

[.07, § 1.4:] Vehicles [used to transport service dogs] shall be equipped with an operational heat alarm and or shelter to protect the SD from extreme environmental elements . . .

Arkansas

ARK. CRIM. DET. FACILITY STDS. § 15-1004 (2015)

Air circulation shall be provided and temperature shall be between 65° and 85° Fahrenheit.

California

CAL. DEP'T OF CORR. & REHAB., DEP'T OPERATIONS MANUAL ch. 5, art. 19, § 52050.27 (2014)

Canine vehicles shall be equipped with . . . heat monitoring systems to ensure the safety of the canine.

Temperature extremes can be detrimental to the service dog's health and in extreme cases may result in death. . . . During hot, humid weather, the vehicle may be secured with the engine and air conditioning running and windows partially opened. Only vehicles equipped with 'secure idle' may be left running while inside institutional grounds. In such cases, the vehicle shall be under direct observation Extreme caution to inside vehicle temperature on hot days shall be exercised with welfare checks of the service dog conducted . . . at least every thirty (30) minutes.

Colorado

COLO. DEP'T OF CORR., ADMIN. REG. 300-56, § IV(H)8) (2011)

Temperatures in indoor living and work areas are appropriate to the summer and winter comfort zones [while special controls are in use].

Delaware

DEL. DEP'T OF CORR., POLICY 8.55, § V (2015)

It is the policy of the Department that all areas of its facilities will be operated in an environment that complies with applicable standards related to . . . air circulation/temperatures.

DEL. DEP'T OF CORR., POLICY 8.62, § VI (2010)

When building cooling is required, systems should be operated so that indoor temperatures are maintained at 75–78 degrees during normal hours of operation. However, lobby, corridor, restroom, building entrances and storage areas shall be maintained at a temperature of 78–80 degrees. Unoccupied buildings and buildings during non-business hours shall be maintained at a temperature no higher than is required to maintain the integrity and operation of the facility and its systems. 24 hour facilities, institutions and health care delivery areas are exempt from

these temperature controls to the extent [that] following these measures threatens life, health or safety. However, when possible, the temperature controls are applicable to the administrative areas of such buildings. Any buildings, rooms or equipment that require precise climate controlled conditions to properly operate are also exempt from the above temperature standards.

DEL. DEP'T OF CORR., POLICY D-02.1, § V (2010)

1. The psychiatrist and/or medical director responsible for the facility will identify those inmates who, by virtue of the medications they are prescribed and other relevant medical criteria, are at risk for suffering from heat-related complications.
2. The psychiatrist and/or prescribing physician will inform the identified inmates of the potential risks of prolonged exposure to heat. Mental health and/or nursing staff will educate the inmates regarding preventative measures, symptoms to watch for and actions to be taken should symptoms develop. Education efforts will include informing inmates on tricyclic antidepressants, and other photosensitive medications, of the need to use sunscreen and wear hats during summer months.
3. Between June 1st and September 30th of each year, the responsible Health Services Administrator will communicate on a weekly basis the names of all identified inmates, and any resulting considerations that may need to be made, including, but not limited to, housing requirements, required levels of fluid consumption, ice, and additional showers, to the facility administrator or their designee.
4. From June 1st through September 30th of each year, correctional officers working in non-temperature controlled units where the identified inmates are housed will monitor the temperature on the housing units at least three times per day between the hours of 10 a.m. and 5 p.m. A log will be maintained in which the temperature readings are recorded.
5. The following measures are to be taken in housing units where the identified inmates are housed if a cell temperature exceeds 90 degrees Fahrenheit:
 - a. Notify the Shift Commander and nursing supervisor.

- b. Use fans to increase ventilation and airflow.
 - c. Provide increased quantities of fluid and ice.
 - d. Allow additional showers to allow cooling.
 - e. Re-take cell temperature every hour until the temperature no longer exceeds 90 degrees.
6. When the above measures are ineffective in reducing the cell temperature the following steps are taken:
- a. Notify the facility administrator or designated representative.
 - b. Have inmates evaluated and monitored by a qualified health care professional, at a level determined to be clinically appropriate by the on-call physician.
 - c. Consider temporary transfer of identified inmates to a cooler area.
7. Any inmate who shows signs of heat-related pathology (e.g., nausea, fatigue, headache, muscle cramps, dry flushed skin, alteration in consciousness) must be immediately referred to the Medical Department for evaluation and treatment.

District of Columbia

D.C. DEP'T OF CORR., PROGRAM STMT. 7500.1, § 10(e) (2008)

Temperature and humidity are mechanically raised or lowered to acceptable comfort levels.

D.C. DEP'T OF CORR., POLICY & PROCEDURE 7500.2C, § 12(b) (2014)

During cooling season, the temperature shall be maintained at a level no higher than 84°F.

D.C. CODE § 24-211.02(b)(2) (2015)

[The Department of Corrections must] Provide to the Council [of the District of Columbia] on a quarterly basis all internal reports relating to living conditions in the Central Detention Facility, including . . . the monthly report on temperature control and ventilation.

Georgia

GA. COMP. R. & REGS. 125-3-5-.04(1)(d) (2015)

During hot weather, all Correctional Officers and Supervisory personnel shall be particularly alert to the early detection of symptoms and the prevention of cases of heat exhaustion [among inmates working outdoors]. New inmates and others who have not acclimated to the environment will require the particular attention of supervisory personnel.

Illinois

20 ILL. ADMIN. C. § 701.80(k) (2015)

Detention areas [in county jails] shall be comfortably heated and cooled according to the season with a system designed to . . . routinely provide temperatures within the normal comfort zone.

20 ILL. ADMIN. C. § 720.40(c) (2015)

[Buildings in which municipal jails are located must] Be heated and cooled according to the season with a system designed to . . . routinely provide temperatures within the normal comfort zone (67° to 85°F).

Indiana

210 IND. ADMIN. C. § 3-1-7(a)(3) (2015)

[In inmate living and activity areas of county jails,] Temperatures shall be maintained at an acceptable comfortable level consistent with exterior conditions, clothing and bedding issued.

Iowa

IOWA ADMIN. C. § 201-50.4(3) (2015)

[In all detention and living areas of jails,] Fans and an adequate supply of cold liquids will be made available and utilized when indoor temperatures exceed 85° Fahrenheit.

IOWA ADMIN. C. § 201-51.4(3) (2015)

[In all detention and living areas of temporary holding facilities,] Fans and an adequate supply of cold liquids will be made available and utilized when indoor temperatures exceed 85° Fahrenheit.

Kansas

KAN. DEP'T OF CORR., INTERNAL MGMT. POLICY & PROCEDURE § 09-102 (2011)

Facilities shall maintain energy efficient thermostat settings, with such devices located in housing, program, and exercise areas to be set . . . where tempered air is available, not lower than 78 degrees Fahrenheit during summer cooling. In other areas of the facilities, the settings shall be set at not . . . less than 72 degrees Fahrenheit for cooling.

Kentucky

501 KY. ADMIN. REGS. 3:050 (2015)

[§ 10(16)(a)(3):] Temperature ranges within comfort zones (sixty-five (65) degrees Fahrenheit to eighty-five (85) degrees Fahrenheit) [are among the required design features for living areas in new local correctional facilities].

[§ 10(17)(c):] Temperature ranges within comfort zones (sixty-five (65) degrees Fahrenheit) to eighty-five (85) degrees Fahrenheit [are among the required design features for direct-supervision areas in new local correctional facilities].

501 KY. ADMIN. REGS. 7:050, § 10(3)(e)(6) (2015)

“Each occupied area [in a new restricted-custody center] shall have temperature ranges within comfort zones, sixty-five (65) degrees Fahrenheit to eighty-five (85) degrees Fahrenheit.

Louisiana

LA. ADMIN. CODE. tit. 22, § 3707(A) (2015)

Temperature and humidity ranges in . . . [new jails] shall be checked and approved by the state health officer.

Maine

ME. DEP'T OF CORR., POLICY 12.4, § VI(E)(2) (2015)

Temperatures in indoor living and work areas shall be appropriate to summer and winter comfort zones.

03-201 ME. CODE R. ch. 1, § II.a(R.20) (LexisNexis 2015)

All inmate housing areas [in county jails] shall be maintained at temperatures no less than 65 and no more than 85 degrees F.

03-201 ME. CODE R. ch. 1, § II.b(H.43) (LexisNexis 2015)

Prisoner holding areas [in holding facilities] shall be no less than 65 degrees F and no more than 85 degrees F.

03-201 ME. CODE R. ch. 1, § II.c(SDA.22) (LexisNexis 2015)

Detention area temperatures shall be no less than 65 degrees F. and no more than 85 degrees F [in short-term detention areas].

Maryland

MD. CODE REGS. 12.02.03.06(A)(12) (2015)

The [community adult rehabilitation] facility shall be well ventilated to insure that internal temperatures during summer months do not exceed outside temperatures by more than 10 degrees.

MD. DIV. OF DET. & PRETRIAL SERVS., DIRECTIVE DPDS.185.0008 (2009)

[Note: The origin of these (and perhaps other) provisions appears to be *Duvall v. Glendening*, 1:94-cv-02541-JFM (D. Md.), available at clearinghouse.net/detail.php?id=758.]

[.01(A):] This directive establishes a heat management system for detainees housed in facilities of the Division of Pretrial Detention and Services.

[.03:] The Division will implement the Heat Plan to reduce the possibility of heat injury and address the health concerns of identified detainees. The Heat Plan will automatically be in effect from May 1st through September 30th each year and whenever a heat emergency is declared by the DPSCS [Department of Public Safety and Correctional Services] Medical Director.

[.04(B)(1):] “Heat Plan” means a systematic plan of action implemented in the summer months, or when there is anticipated warming of the ambient air that exceeds 88° Fahrenheit. The plan allows for the identification and housing of detainees at risk for heat injury.

[.05:] A. Assessment and Identification

At the time of intake, medical staff will assess the detainee to determine if the individual is susceptible to heat related injuries and assign a corresponding heat risk code of:

- (1) H-1;
- (2) H-2; or
- (3) H-3.

B. Housing Assignment

Medical staff shall forward documentation reflecting the heat risk code of new detainees to the Traffic Unit to be used for housing assignment as follows:

- (1) Heat Risk Code – H-I detainees shall be assigned to a:
 - (a) Permanently air-conditioned housing area; or
 - (b) Housing area with provisions for respite, to include:
 - (i) Rotational movement of the detainee to an area at a temperature of 87° Fahrenheit or lower for a period of 1 hour at least 3 times daily;
 - (ii) Circulating air in the housing area while inside temperatures exceed 88° Fahrenheit for four hours;
 - (iii) Access to at least 12 ounces of water or other fluids per hour for 10 consecutive hours;

- (iv) Minimization of physical activity and outside work related activities;
and
- (v) Showers once each day.

(2) Heat Risk Code – H-2 detainees shall be assigned to a housing area with provisions for respite, to include:

- (a) Rotational movement of the detainee to an area at a temperature of 87° Fahrenheit or lower for a period of 1 hour at least 2 times daily;
- (b) Circulating air in the housing area while inside temperatures exceed 88° Fahrenheit for four hours;
- (c) Access to at least 8 ounces of water or other fluids per hour for 10 consecutive hours;
- (d) Minimization of physical activity and outside work related activities; and
- (e) Showers as per the routine facility.

(3) Heat Risk Code – H-3 detainees shall be assigned to housing areas following the standard heat alert protocol.

C. Heat Code Re-Evaluation

- (1) Medical Services, Psychology Services and Mental Health staff will provide updated lists of detainees assigned to heat risk codes of H-1 or H-2 each week.
- (2) If the detainee's heat risk code has changed, the authorized treatment staff will submit a "Transfer of Housing" form to the Traffic Office.

D. Heat Alert Action – General

- (1) The Warden is responsible to provide instructions, procedures, post orders and any other directions required for the implementation of this directive.
- (2) Whenever the Office of Resident Health Services issues a Heat Alert for a facility, the Warden or design shall ensure that:

- (a) All facility staff is notified of the Heat Alert at roll call;
- (b) Provisions are made to supply adequate amounts of ice to all housing areas of that facility;
- (c) Provisions are made to deploy additional fans in that facility as needed;
- (d) In Specialized Housing Areas (Maximum Security) respite for H-I and H-2 coded detainees will be provided in 1 dayroom for each housing unit through the utilization of a window-mounted air condition unit.
- (e) Facility staff is advised to follow protocol as outlined in Attachment A of this directive; and
- (f) Daily records are maintained during Heat Alerts to document the time period and location for which each occasion of respite was provided.

[Attachment A:] Heat Alert Information Sheet

- All individuals should drink additional fluids to keep themselves hydrated. Ensure that sufficient water, or other drinking fluids, and ice is available during this time of excessive heat
- Work crews should take additional breaks and need to stay hydrated. Please, Note that water replacement alone is not sufficient in severe heat conditions. In consultation with the DPSCS Medical Director, outside work crew schedules may be modified related to excessive heat, (e.g.. work in am only).
- Outside recreation may be cancelled or recreation moved to a cooler location and recreation time may be limited.
- Increased use of showers may be permitted, after consultation with the Building Supervisor.
- Advise all detainees who suffer from chronic conditions such as asthma, hypertension, diabetes, etc., to use caution in their exercise routine. Individuals on medications that are sensitive to heat should also use caution in their exercise routine.

- Individuals should use caution and be mindful of the symptoms of heat illness listed below. Please, ensure that all individuals who show these early signs of heat stroke are referred to the dispensary:

- (1) Dizziness
- (2) Headache
- (3) Nausea
- (4) Vomiting
- (5) Excessive sweating
- (6) Feeling faint

MD. OFFICE OF INMATE HEALTH SERVS., MED. EVALS. MANUAL, ch. 1, sec. 1A, pt. I (2009)

[§ I:] All inmates newly admitted to DPSCS facilities shall receive a medical intake evaluation immediately upon an inmate's entrance from the community that will . . . Identify at an earlier time arrestees/detainees/inmates who may be at risk for heat related health issues if placed in non-air conditioned environments.

[§ II(D)(2):] Heat Stratification is required on all admissions to an Intake facility and periodically as conditions affecting any change in that status arise.

a. All arrestees, male and female will be assigned a heat risk category upon entry and at the Comprehensive Intake Physical Examination and housing assignment process, and throughout the year.

i. All male arrestees shall be designated for H1 housing by the receiving/screening nurse while at BCBIC (air conditioned housing) until they are reevaluated by a clinician and heat risk is reclassified based upon the initial chronic medical conditions or medications prescribed as per DPSCS heat stratification policy.

A. Clinical findings and medications prescribed at the intake examination will determine the final heat risk stratification.

B. Any detainee who is prematurely moved prior to receiving a Comprehensive intake Physical or is placed into a non air-conditioned facility as part of the transfer screening process, prior to receipt of a final heat stratification assignment will receive an his or her Intake Comprehensive Intake Physical and a final heat stratification.

iii. [sic; there is no ii] The H-1 assignment will remain until the intake physical is completed and an alternative risk is assigned.

b. Female arrestees will receive heat stratification upon entry to BCBIC and upon their Comprehensive Intake Physical at WDC per protocol.

c. Final heat stratification shall be by medical doctor and shall be documented on the Electronic Patient Health Record (EPHR) Patient Problem list as “Heat Risk Stratification” category H-1[,] H-2 or H-3 and in the Electronic Patient Health Record (EPHR) Medical Classification template located on the home page.

d. A weekly data report of H-1 and H-2 detainees will be maintained and submitted to classification and to the OIHS as an electronic file from May 1 through September 30th each calendar year from both medical and mental health contractors . Included in that file shall be, at a minimum:

- i. The inmate’s name,
- ii. Date of birth,
- iii. DOC number,
- iv. Heat stratification code
- v. Facility and
- vi. Any code changes.

e. There shall be a notification on the individual problem lists for patients requiring a heat stratification code change, specifically, the original heat stratification on the problem list will be recorded as resolved and the new Heat Stratification will be entered

as the current “problem” on that list. This process will be repeated every time there is a Heat Stratification change.

MD. DIV. OF PRETRIAL DET. & SERVS., DIRECTIVE DPDS.185.0008, HEAT PLAN (2009)

[§ .03:] The Division will implement the Heat Plan to reduce the possibility of heat injury and address the health concerns of identified detainees. The Heat Plan will automatically be in effect from May 1st through September 30th each year and whenever a heat emergency is declared by the DPSCS [Department of Public Safety and Correctional Services] Medical Director.

[§ .04(B)(1):] “Heat Plan” means a systematic plan of action implemented in the summer months, or when there is anticipated warming of the ambient air that exceeds 88° Fahrenheit. The plan allows for the identification and housing of detainees at risk for heat injury.

[§ .05:] A. Assessment and Identification

At the time of intake, medical staff will assess the detainee to determine if the individual is susceptible to heat related injuries and assign a corresponding heat risk code of:

- (1) H-1;
- (2) H-2; or
- (3) H-3.

B. Housing Assignment

Medical staff shall forward documentation reflecting the heat risk code of new detainees to the Traffic Unit to be used for housing assignment as follows:

- (1) Heat Risk Code – H-I detainees shall be assigned to a:
 - (a) Permanently air-conditioned housing area; or
 - (b) Housing area with provisions for respite, to include:
 - (i) Rotational movement of the detainee to an area at a temperature of 87° Fahrenheit or lower for a period of 1 hour at least 3 times daily;

- (ii) Circulating air in the housing area while inside temperatures exceed 88° Fahrenheit for four hours;
- (iii) Access to at least 12 ounces of water or other fluids per hour for 10 consecutive hours;
- (iv) Minimization of physical activity and outside work related activities; and
- (v) Showers once each day.

(2) Heat Risk Code – H-2 detainees shall be assigned to a housing area with provisions for respite, to include:

- (a) Rotational movement of the detainee to an area at a temperature of 87° Fahrenheit or lower for a period of 1 hour at least 2 times daily;
- (b) Circulating air in the housing area while inside temperatures exceed 88° Fahrenheit for four hours;
- (c) Access to at least 8 ounces of water or other fluids per hour for 10 consecutive hours;
- (d) Minimization of physical activity and outside work related activities; and
- (e) Showers as per the routine facility.

(3) Heat Risk Code – H-3 detainees shall be assigned to housing areas following the standard heat alert protocol.

C. Heat Code Re-Evaluation

- (1) Medical Services, Psychology Services and Mental Health staff will provide updated lists of detainees assigned to heat risk codes of H-1 or H-2 each week.
- (2) If the detainee's heat risk code has changed, the authorized treatment staff will submit a "Transfer of Housing" form to the Traffic Office.

D. Heat Alert Action – General

(1) The Warden is responsible to provide instructions, procedures, post orders and any other directions required for the implementation of this directive.

(2) Whenever the Office of Resident Health Services issues a Heat Alert for a facility, the Warden or design shall ensure that:

- (a) All facility staff is notified of the Heat Alert at roll call;
- (b) Provisions are made to supply adequate amounts of ice to all housing areas of that facility;
- (c) Provisions are made to deploy additional fans in that facility as needed;
- (d) In Specialized Housing Areas (Maximum Security) respite for H-1 and H-2 coded detainees will be provided in 1 dayroom for each housing unit through the utilization of a window-mounted air condition unit.
- (e) Facility staff is advised to follow protocol as outlined in Attachment A of this directive; and
- (f) Daily records are maintained during Heat Alerts to document the time period and location for which each occasion of respite was provided.

Massachusetts

103 MASS. CODE REGS. 920.10 (2015)

At least every three years, an independent, qualified source shall document that all living areas have: . . . (3) Temperatures appropriate to summer and winter comfort zones . . .

MASS. DEP'T OF CORR., POLICY 103 DOC 703.12(9) (2013)

[.12(9):] Temperatures in indoor living and work areas [of new construction and additions] are appropriate to the summer and winter comfort zones per Department of Public Health Regulations.

[.19(3)(C):] [In all activity areas of new construction and additions,] temperatures are appropriate to the summer and winter comfort zones with consideration for the activity being performed.

Minnesota

MINN. R. 2900.0200, subpt. 19 (2015)

All [new] facilities shall be designed and provided with necessary equipment to maintain temperatures in prisoner living areas between 65 and 71 degrees Fahrenheit during winter months and between 66 and 85 degrees Fahrenheit during summer months.

MINN. DEP'T OF CORR., POLICIES, DIRECTIVES & INSTRUCTIONS MANUAL, POLICY 105.126 (2015)

PURPOSE: To establish a process for the prevention of heat related illnesses, cold weather exposure, and protection from severe weather.

POLICY: . . . Each applicable unit/facility must establish a safety program that establishes guidelines for the prevention of heat related illnesses, cold weather exposure, and protection from severe weather. Each applicable unit/facility must develop instructions to implement this policy.

MINN. R. 5205.0110, subpt. 2 (2015)

. . . The requirements of this subpart cover employee exposure to indoor environmental heat conditions. . . .

[(A)(1):] "Wet bulb globe temperature index" or "WBGT" means a measure of the combined effect of air temperature, air speed, humidity, and radiation. $WBGT = 0.7 T_{nwb} + 0.3 T_g$.

[(A)(4):] "Heavy work" means 350 or higher kcal/hr (kilocalories per hour), for example: heavy lifting and pushing, shovel work.

[(A)(5):] "Moderate work" means 200 to 350 kcal/hr, for example: walking with moderate lifting and pushing.

[(A)(6):] “Light work” means up to 200 kcal/hr, for example: sitting or standing performing light hand or arm work.

[(B):] Employees shall not be exposed to indoor environmental heat conditions in excess of the values listed in Table 1. The values in Table 1 apply to fully clothed acclimatized workers.

TABLE 1. Two-hour time-weighted average permissible heat exposure limits.

Work Activity	WBGT, °F
Heavy work	77
Moderate work	80
Light work	86

[(C):] Employees with exposure to heat shall be provided training according to part 5206.0700, subparts 1 and 3 [Department of Labor and Industry rules for training employees about harmful physical agents.].

Nebraska

77 NEB. ADMIN. CODE § 001.01C (2015)

[Existing community residential facilities must have] Adequate heating and cooling systems to insure a comfortable and healthful living and working environment that are [sic] appropriate to the summer and winter comfort zones.

77 NEB. ADMIN. CODE § 006.07 (2015)

Heating and cooling systems [in newly constructed and renovated community residential facilities] shall provide a comfortable and healthful living and working environment with temperatures maintained between sixty-five (65) and eighty (80) degrees Fahrenheit.

81 NEB. ADMIN. CODE § 006.04 (2015)

“Heating and cooling systems [in newly constructed and renovated jail facilities] shall provide a comfortable and healthful living and working environment with temperatures maintained between sixty-five (65) and eighty (80) degrees Fahrenheit.”

Nevada

NEV. ADMIN. CODE § 211.320(3) (2014)

Cells, dormitories, dayrooms and other areas of local correctional institutions used to house inmates . . . must be provided with a ventilating system which is maintained to prevent the inside air temperature from rising above 85 degrees Fahrenheit.

NEV. DEP'T OF CORR., ADMIN. REG. 493.02, § 3(A)(1) (2014)

Set all air conditioning space temperatures at 78 degrees Fahrenheit (summer cooling) during daytime waking hours and 83 degrees Fahrenheit during nighttime sleeping hours in inmate cells and staff offices and common areas. NRS 444.335/NAC211.320 states that a comfort level of no more than 85 degrees Fahrenheit be maintained in inmate cells. In addition[,] Section 1028 of the State Administrative Manual (SAM) states the following “Building temperature should be kept at a minimum of 78°F in the summer”

New Jersey

N.J. ADMIN. CODE §§10A:4-10.4(a) (2015)

Ventilation and reasonable temperature shall be maintained on a 24 hour basis [in detention areas].

N.J. ADMIN. CODE §§10A:5-2.12(a) (2015)

Proper ventilation, lighting, room temperatures, cleanliness and properly functioning sanitary fixtures shall be maintained in cells within the [Management Control Unit]

N.J. ADMIN. CODE §§10A:5-3.4(a) (2015)

Ventilation and reasonable temperature shall be maintained on a 24-hour basis [in administrative segregation, close custody units].

N.J. ADMIN. CODE §§10A:5-5.6(a) (2015)

Ventilation and reasonable temperature shall be maintained on a 24-hour basis [in protective custody, close custody units].

New Mexico

N.M. CORR. DEP'T, POLICY CD-163000, § GG (2013)

Temperatures in indoor living and work areas shall be appropriate to the summer . . . comfort zone.

N.M. CORR. DEPT., POLICY CD-171500 (2013)

PURPOSE: To establish the Standard of Care for the reduction of psychotropic medication-related heat pathology.

POLICY: Medications with anticholinergic effects, such as phenothiazines, tricyclic antidepressants, antihistamines, etc., decrease sweating capacity. Neuroleptics affect the thermoregulating mechanisms of the brain. Diuretics, such as furosemide (lasix), hydrochlorothiazides [sic], etc., cause dehydration. Inmates on any of these types of medications have increased sensitivity to heat and sunlight and are at high risk for developing the following heat induced syndromes: muscle cramps, heat exhaustion and malignant neuroleptic syndrome (heat stroke). Inmates taking any of these medications should not be exposed to elevated temperatures, poorly ventilated areas, or direct sunlight for extended periods of time.

N.M. CORR. DEPT., POLICY CD-171501 (2013)

PROCEDURE:

- A. The prescribing physician will warn inmates taking diuretics or psychotropic medication of the risks of developing heat-related illnesses.
- B. Inmates will be advised to wear protective clothing and/or sunscreen when under direct sunlight.
- C. Inmates will be advised to avoid excessive exhausting activities in high temperatures during the summer.
- D. Native American inmates taking diuretics or psychotropic medication will be warned regarding the risks of developing heat-related illnesses while participating in sweat lodges.

E. Inmates will be advised to drink an adequate amount of fluids (8–12 glasses of liquid per day) to avoid dehydration.

F. If the inmate needs special living or work conditions, the Facility Medical Director will issue a written order (which may be a medical chrono) addressing the need to the facility classification officer. At the beginning of each week, a list of all inmates that are subject to developing heat pathology will be submitted to the Unit Manager.

G. The housing unit custody officer will check the inside and outside temperatures every two hours, from 10 a.m. to 6 p.m. beginning June 1 and continuing through September 30.

H. The following documents are to be maintained at the institution each month from June 1 and continuing through September 30:

1. Outside Temperature Logs,
2. Inside Temperature Logs,
3. Medical Rounds Logs,
4. Heat Incident Logs, and
5. Weekly Lists of Heat-Risk Inmates.

I. A heat pathology log must be maintained, reviewed and signed by the Warden or Deputy Warden and the Health Service Administrator. It shall include the following information in chronological order:

1. Inside Temperature of 90 Degrees and Above:

Include date, hour(s), temperature and location by housing unit(s). Indicate “None” if a temperature of 90 degrees was not attained in the housing unit(s).

2. Medical Rounds Performed in Housing Unit(s) Reaching 90 Degrees or More:

Name of medical staff conducting rounds, name of inmate(s), NMCD number(s), housing unit(s) and a brief summary of medical treatment ordered. Indicate “None” if there were no heat-related illnesses identified.

3. Outside Temperature Logs:

Include date, hour(s), temperature, and location by housing unit(s). Indicate “None” if an outside temperature of 90 degrees was not attained.

4. Weekly List of Heat-Risk Inmates:

Note the distribution (as deemed appropriate) and availability of list on file at the institution.

5. Heat Incident Log:

Include the name and inmate number of any inmate requiring attention because of heat exposure; include the date, time, hour of incident, and housing unit.

J. If inmates housing area exceeds 90 degrees Fahrenheit, the following measures must be instituted by the Unit Manager:

1. Notify the Health Services Administrator;
2. Provisions of increased fluids and ice;
3. Allowance of additional showers to provide cooling;
4. Increase ventilation to the area as much as possible to reduce housing area temperatures to less than 90 degrees Fahrenheit;
5. If the housing area remains consistently above 90 degrees Fahrenheit, temporary transfer of the inmate to an area of the institution or other institution that is more compatible with the inmate’s clinical status.

K. Inmates who show signs of heat-related pathology, e.g. nausea, fatigue, headache, muscle cramps, dry flushed skin, alteration in consciousness, must be immediately referred to the Medical Department for evaluation and treatment, according to the “Protocol for Treatment of Heat-induced Syndrome”.

North Carolina

10A N.C. ADMIN. CODE 14J.1217(a) (2015)

Each [new] jail shall have heating, ventilation, and air conditioning systems that are capable of maintaining temperatures in confinement units not less than 68 degrees Fahrenheit during the heating season and not more than 85 degrees Fahrenheit during the cooling season.

10A N.C. ADMIN. CODE 14J.1512(i) (2015)

Confinement areas [in existing jails and local confinement facilities] shall be cooled within a range of not less than 75 degrees nor more than 85 degrees.

10A N.C. ADMIN. CODE 14J.1606(4) (2015)

[Mechanical systems in existing state-funded satellite work/work-release units must] Have capability of maintaining temperatures in the confinement areas within 68 degrees Fahrenheit minimum in the heating season and a maximum of 85 degrees Fahrenheit during the non-heating season.

10A N.C. ADMIN. CODE 14J.1743(a) (2015)

Each municipal lockup shall have heating, ventilation, and air conditioning systems that are capable of maintaining temperatures in confinement units not less than 68 degrees Fahrenheit during the heating season and not more than 85 degrees Fahrenheit during the cooling season.

Ohio

OHIO ADMIN. CODE 5120:1-7-02(B)(17) (2015)

[Definition] “Fundamental rights”: Rights which may not be suspended for disciplinary or classification reasons and which are to be guaranteed to all inmates except in times of emergency or other such conditions beyond the control of the facility administrators. Such rights may include . . . adequate ventilation, temperature control . . .

OHIO ADMIN. CODE 5120:1-8-04(D) (2015)

(Important) Temperature is mechanically raised or lowered to acceptable comfort levels [in full-service jails].

OHIO ADMIN. CODE 5120:1-10-04(C)(2) (2015)

[In single cells/rooms and multiple occupancy cells/rooms/dormitories of 12-day jails,]
Temperatures shall be maintained in a range between sixty-six to eighty degrees Fahrenheit.

OHIO ADMIN. CODE 5120:1-12-04(C)(2) (2015)

[In single cells/rooms and multiple occupancy cells/rooms of 12-hour facilities,] Temperatures shall be maintained in a range between sixty-six to eighty degrees Fahrenheit.

OHIO DEP'T OF REHAB. & CORR., POLICY 67-MNH-07, § H (2015)

1. Inmates on psychotropic medication shall not be exposed to sustained elevated temperature or direct sunlight for extended periods of time. Patients on certain psychotropic medications have increased sensitivity to sunlight and are at higher risk of heat-induced syndromes: heatstroke, hyperthermia, and heat prostration. In view of these factors, inmates and correctional staff shall be provided the following information:

- a. Inmates shall be directed to wear protective clothing and/or sunscreen when in direct sunlight.
- b. Inmates shall be directed to avoid excessive, exhausting activities outdoors in the heat of summer.
- c. Inmates shall be directed to consume an adequate intake of fluids (8–12 glasses of liquid per day) to avoid dehydration.

2. Institutional staff, as designated by the Managing Officer, shall ensure that the following steps are taken:

- a. The temperature of the buildings and interior of the cells must be monitored regularly during the summer months and logged on a temperature log

b. If the inmate housing areas exceed 90 degrees Fahrenheit, the following “Heat Plan” measures shall be instituted:

- i. Provide increased ventilation to the area through utilization of fans to improved air flow and reduce ambient temperature to less than 90 degrees.
- ii. Make provisions for increased fluids and ice.
- iii. Permit additional showers to provide cooling.
- iv. Consideration shall be given by the Managing Officer or designee to permit a temporary reassignment of the inmate to an area of the institution that is cooler and more compatible with the inmate’s clinical status.

3. The temperature log shall also record whether any Heat Plan measures were implemented, which measures were implemented, and how long they were in effect.

4. Completed logs shall be submitted to the MHA/MHM.

Oklahoma

OKLA. ADMIN. CODE § 310:670-5-6(27) (2015)

Air circulation and ventilation [in jail facilities and detention centers] shall be capable of maintaining a temperature of at least eighty-five (85) degrees Fahrenheit or lower. If temperature exceeds eighty-five (85) degrees Fahrenheit, positive air movement shall be provided by use of fans, coolers, or air conditioning units. New facilities or substantially remodeled facilities shall be equipped with central air conditioning or individual air conditioning units which are capable of maintaining a temperature of eighty-five (85) degrees Fahrenheit.

“Excessive Heat Warning—Contingency Planning,” Memorandum from Don Suttmiller, Chief Medical Officer, to All Correctional Administrators & All Correctional Healthcare Professionals (May 6, 2014), *available at* ok.gov/doc/documents/Heat_warning_2011.pdf

In preparation for the upcoming summer temperatures, the following guidelines should be put in place. When continued exposure to air temperatures or heat index readings, exceed 95

degrees Fahrenheit, this puts certain individuals at an increased risk for heat related illnesses. *Elderly offenders (over 55 years of age) and mental health patients on psychotropic medication have the greatest risk potential.* Other factors contributing to an individual's risk include:

- Chronic illnesses, particularly respiratory and cardiovascular disease and diabetes
- Recent illness involving fluid loss from vomiting or diarrhea.
- Humid weather
- Working or residing in a hot environment
- Loss of body fluids from sweating and failure to drink sufficient quantities of replacement fluids
- Heavy, restrictive clothing
- Fever

The effects of extreme heat can be insidious and may compromise an individual's health status even before it becomes apparent. Simple overexposure can cause heat exhaustion in elderly persons. Recognizing the early onset of symptoms is essential. Signs and symptoms of heat exhaustion include:

- Dizziness, fatigue, faintness, and headache.
- Skin that is pale and clammy.
- Weak rapid pulse.
- Breathing that is fast and shallow.
- Muscle cramps, usually of the abdomen or legs.
- Intense thirst.

People who do not receive adequate treatment for the symptoms of heat exhaustion will likely develop symptoms of heat stroke. *This condition is life threatening.* Signs and symptoms of a heat stroke include:

- Skin that becomes hot, dry, and appears flushed.

- Perspiration ceases.
- Body temperature is elevated and may reach 107 degrees Fahrenheit.
- Rapid pulse.
- Mental confusion.
- Eventual loss of consciousness.

Offender mental health patients who are taking psychotropic medications are also at increased risk for sun and heat sensitivity. They should avoid direct sun or extreme heat exposure. They should receive a break every 30 minutes in shade, and should be encouraged to drink fluids when the heat index temperature exceeds 85 degrees. Exercise should be encouraged only in the early morning rather than in the highest heat of the day. Facility work crew supervisors should contact Medical Services for recommendations regarding work crew restrictions.

Offenders should have access to hats and sunscreen as appropriate for their work assignment.

Treatment must be initiated when symptoms of heat exhaustion are identified. Immediate first aid measures include:

- *Get the person out of the heat and into a cooler environment.*
- Place them in the shock position (lying on back with feet elevated) if indicated.
- Remove or loosen clothing.
- Cool them by fanning and/or with cold packs, wet towels or sheets.
- Offer water (4–5 ounces) every 15 minutes if they are conscious and can tolerate it.

Each facility must develop a contingency plan to ensure adequate protection for offenders who have the greatest risk potential. Elements of this plan should include:

- Identification of offenders who meet the criteria for risk (i.e., over 55 *or on psychotropic medications*).

- Routine assessment of offenders who are at risk when air temperatures or heat index readings exceed 95 degrees Fahrenheit (unless the offender is housed on an air-conditioned unit).
- An air-conditioned area available between sunrise and sunset if needed. Symptomatic offenders at risk may be successfully managed in the air-conditioned area during day light hours and returned to their housing units after sunset.
- Fans available to elderly offenders who have other risk factors and do not live on air-conditioned housing units.

Please provide appropriate consultation and advisement to your facility head. It will require a cooperative effort by medical and security to ensure that measures are implemented to protect offenders who are at risk for heat related illnesses. Thank you for your assistance and prompt attention. Feel free to call if you have any questions.

Pennsylvania

PA. DEP'T OF CORR., GENERAL SAFETY PROCEDURES MANUAL, POLICY 15.1.1, § I(D)(1)(b) (2014)

A Ventilation/Light/Sound/Temperature Testing Report (Attachment 1-F) shall be completed annually by the Central Office Safety and Environmental Protection Division during the Annual Operations Inspection.

PA. DEP'T OF CORR., GENERAL SAFETY PROCEDURES MANUAL, POLICY 15.1.1, § 20(C)(4) (2011)

Interior Environment

- a. The temperature in all Department-owned facilities will be maintained at 67 degrees in the winter and 75 degrees in the summer.
- b. This excludes areas that are not heated or cooled and areas with unique environmental needs.

South Dakota

S.D. DEP'T OF CORR., POLICY 1.5.C.1 (2014) [scheduled for revision in 3/15]

[§ II:] Department of Corrections (DOC) staff will have inmates discontinue strenuous physical activity when the heat index reaches a level considered unsafe.

[§ IV(1)(A):] The shift commander will ensure the heat index is monitored whenever weather conditions warrant.

[§ IV(2):] Monitoring Heat Index and Declaring an Alert:

A. Any time the temperature is forecasted to be *ninety degrees Fahrenheit (90°F) or greater*, the shift commander or designee will periodically check the heat index, particularly from the hours of 12 p.m. to 5 p.m.

1. Any time the heat index is between *one hundred degrees Fahrenheit (100°F) to one hundred four (104°F)*, the shift commander or designee will check the heat index *at least hourly*. . . .

B. If the heat index *reaches or exceeds one-hundred five degrees (105° F)*, the shift commander will announce a heat index alert over the radio and staff will inform inmates and immediate community service work supervisors of the alert. Staff will begin implementing the procedures described below in *Heat Index Limitation of Activities*.

C. When declaring a heat index alert, the shift commander will direct staff to carefully observe inmates for signs or symptoms of common heat related health problems

D. If an inmate shows signs of heat related distress, first aid will be administered immediately and Health Services will be contacted. Responding staff will contact the shift commander as soon as practical.

[§ IV(3):] Heat Index - Limitation of Activities:

A. Any time a heat index alert is announced, inmates will be restricted from performing non-essential outside strenuous work activity and/or outside strenuous recreation activity.

B. Exceptions may be granted by the Secretary of Corrections or Director of Prison Operations during an Emergency Response Operation, Deployment to a Natural Disaster or other activities deemed essential, provided proper safety precautions are planned and exercised.

C. The shift commander and/or work supervisors will determine what constitutes non-essential outside strenuous work and outside strenuous recreational activity. During a heat index alert, inmates will either be sent back to their housing unit or may be allowed to perform limited recreational activity or essential outside strenuous work activity, as approved by the shift commander and/or work supervisor.

D. Outside strenuous recreation activity includes but is not limited to: weight lifting, jogging, basketball and any other recreation type activity the shift commander deems excessive. Inmates may remain outside at recreation during a heat index alert but for their own safety, activities will be restricted.

E. Inmates assigned to essential outside strenuous work activity should be allowed time to acclimate to the heat.

F. Inmates performing essential outside strenuous work activity or attending outside recreation when a heat index alert has been announced will have access to chilled water and should be encouraged to drink water frequently, (Recommended amount is approximately one cup every 15–20 minutes or about 1 quart an hour).

G. Inmates performing essential outside strenuous work activity when a heat index alert has been announced will be offered frequent breaks in a cool and/or shaded area (when possible).

Tennessee

TENN. COMP. R. & REGS. 1400-01-.04(1)(d) (2015)

New and existing [local correctional] facilities shall have a temperature of not less than sixty-five (65) degrees Fahrenheit and not more than eighty (80) degrees Fahrenheit in sleeping and activity areas.

Texas

37 TEX. ADMIN. CODE § 259.256 (2015)

Temperature levels [in new lockup facilities] shall be reasonably maintained between 65 degrees Fahrenheit and 85 degrees Fahrenheit in all occupied areas.

37 TEX. ADMIN. CODE § 259.350 (2015)

Temperature levels [in new medium-security jails] shall be reasonably maintained between 65 degrees Fahrenheit and 85 degrees Fahrenheit in all occupied areas.

37 TEX. ADMIN. CODE § 259.446 (2015)

Temperature levels [in new minimum-security jails] shall be reasonably maintained between 65 degrees Fahrenheit and 85 degrees Fahrenheit in all occupied areas.

37 TEX. ADMIN. CODE § 259.517 (2015)

Temperature levels [in new jail temporary housing (tents)] shall be reasonably maintained between 65 degrees Fahrenheit and 85 degrees Fahrenheit in all occupied areas.

37 TEX. ADMIN. CODE § 259.617 (2015)

Temperature levels [in new jail temporary housing] shall be reasonably maintained between 65 degrees Fahrenheit and 85 degrees Fahrenheit in all occupied areas.

37 TEX. ADMIN. CODE § 259.762 (2015)

Temperature levels [in new long-term-incarceration jails] shall be reasonably maintained between 65 degrees Fahrenheit and 85 degrees Fahrenheit in all occupied areas.

37 TEX. ADMIN. CODE § 260.154 (2015)

Temperature levels [in county correctional centers] shall be reasonably maintained between 65 degrees Fahrenheit and 85 degrees Fahrenheit in all occupied areas.

37 TEX. ADMIN. CODE § 261.160 (2015)

Temperature levels [in existing maximum-security jails] shall be reasonably maintained between 65 degrees Fahrenheit and 85 degrees Fahrenheit in all occupied areas.

37 TEX. ADMIN. CODE § 261.255 (2015)

Temperature levels [in existing lockup facilities] shall be reasonably maintained between 65 degrees Fahrenheit and 85 degrees Fahrenheit in all occupied areas.

37 TEX. ADMIN. CODE § 261.350 (2015)

Temperature levels [in existing minimum-security jails] shall be reasonably maintained between 65 degrees Fahrenheit and 85 degrees Fahrenheit in all occupied areas.

47 TEX. ADMIN. CODE § 259.160 (2015)

Temperature levels [in new maximum-security jails] shall be reasonably maintained between 65 degrees Fahrenheit and 85 degrees Fahrenheit in occupied areas.

TEX. DEP'T OF CRIM. JUST., CORRECTIONAL MANAGED HEALTH CARE POLICY MANUAL D-27.2 (2014)

[p. 1:] It is the *responsibility of the facility medical staff* to provide guidelines to assist the facility administration in the determination of safe and healthful work conditions. Every reasonable effort shall be made in the interest of preventing heat-related injuries in the workplace. Problems of heat stress are more common than those prevented by very cold environments. Heat stress is best prevented by acclimatizing staff and offenders to working under hot and humid climate conditions, assuring adequate fluid intake and, to a lesser extent, assuring adequate salt intake. Proper treatment of heat stress should begin at the work site, but severe heat stress is a medical emergency which must be treated in a medical facility. *Salt tablets should not be used in the treatment or prevention of heat stress.*

[p. 2:] PROCEDURES:

I. Whenever the temperature is 85°F or higher, the Warden (or designee) will use the Heat and Humidity Index . . . to *determine safe hot weather working conditions*. Prior to exposing workers to

extremely hot working conditions, the Warden or designee should consult with medical staff to evaluate the hazard of the effective temperature.

II. *Acclimatization*. Offenders newly assigned to jobs which require strenuous work under conditions with an apparent air temperature of 90°F or greater . . . must be acclimatized before assuming a full workload. They should work no more than 3–4 hours at a time, separated by at least one hour rest in a cooler environment for the first week. After the first week, they may assume a normal work schedule. Acclimatization can be lost in as little as two weeks, so anybody who has been away from a hot work environment for more than two weeks should be reacclimatized. Acclimatization is not necessary for persons assigned to the same job when temperatures vary with seasonal changes.

III. *Fluid Intake*. Offenders and staff working at apparent air temperatures over 90°F should maintain an intake of at least 16 oz of fluids per hour of work. Under extreme conditions, work should be interrupted every 15–20 minutes and offenders instructed to drink fluids even if they are not thirsty. Drinking water will always be available to workers in hot weather conditions.

IV. *Work-rest Cycle*. Whenever the apparent temperature . . . is 90–95°F, a 5-minute rest break should be given every hour. If the apparent temperature is 96–120°F, a 5-minute rest break should be given every 30 minutes, and work intensity be reduced by 1/3. If the apparent temperature is over 120°F, work should be curtailed, or, if work must continue, a 10-minute rest period should follow every 20 minutes of work, and work intensity should be decreased by 1/2 to 2/3.

V. *Newly-assigned workers* who are not acclimatized to the heat should be evaluated by the medical staff before being subjected to significant heat stress, and should be monitored by supervisors for signs of heat stress during the acclimatization period.

VI. *Offenders on Medications*. Work assignments for offenders on medications classified as anhidrotics, poikilothermics or potentiators . . . should be considered carefully. In general, offenders on antipsychotic drugs should not be allowed to work or recreate in environments where the apparent air temperature is 95°F or higher. This restriction should also be considered for offenders who are on other drugs classified as anhydrotics [sic] or poikilothermics or

potentiators if they are on more than one such drug or if they also have an underlying medical condition that places them at increased risk . . . , particularly at higher dosage levels of the drugs. Decisions about suitability of work assignments for these offenders will be made by facility medical staff. Documentation shall be made in the patient's health record on the HSM-18, *Health Summary for Classification*, form.

Infopac Report #IMS042 lists all offenders with heat sensitive medical restrictions, including offenders on psychotropic medications. This list is to be reviewed at least once a week during the summer months of May through September and a determination made that the listed offenders have appropriate HSM-18 restrictions.

VII. *Transportation*. Units are to refrain from transporting psychiatric inpatients to another facility via chain bus. Offenders on the Infopac medication list should be transported during the coolest hours of the day. Outgoing chain screens should be reviewed against the unit Infopac Report to ensure that the offenders on medication are traveling on the appropriate mode of transportation. Please note that the Transportation Department adjusts their schedule during the summer months so that routes are run during the coolest part of the day.

VIII. *Training*. Facility medical staff shall provide initial and annual training in the prevention of temperature extreme injury to all supervisory personnel who manage employees and offenders. Documentation of completed training shall be maintained by the Facility Health Administrator. Training should generally be accomplished in March or April of each year.

IX. *Reporting*. Facility medical staff shall complete the "Heat-Related Illness Reporting Form" . . . for each case of heat cramps, heat exhaustion, heat stroke or neuroleptic malignant syndrome. . . .

TEX. DEP'T OF CRIM. JUST., ADMIN. DIRECTIVE AD-10.64 (2008)

[p. 1:] POLICY:

The TDCJ shall establish guidelines to assist unit administration in adapting offender work assignments to temperatures in the work environment that cannot be controlled by the Agency. . . .

Every reasonable effort shall be made to prevent extreme temperature-related injuries in the workplace. . . .

PROCEDURES:

Prior to exposing offenders to extreme temperature conditions (i.e., cold/heat), the Warden and involved Department Supervisors shall ensure appropriate measures are instituted which prevent extreme temperature-related injuries. The Warden and involved Department Supervisors are encouraged to consult medical staff to ascertain specific hazards. In all cases of temperature-related incidents or injuries, the unit medical staff and the unit Risk Manager shall be notified immediately. Upon arrival on the scene, medical staff shall take control of the individual's medical care. The injured offender shall be removed from the environment by the most expeditious means available to receive proper medical treatment.

[§ I(A):] During work assignments, offenders shall be exposed to no more than three (3) or four (4) hours at a time, until acclimated to existing weather conditions. Work periods may then be extended as the offender physically adjusts to the weather conditions. Appropriate clothing shall be worn to protect the offender from extreme temperature conditions at all times.

[§ I(B):] Unit staff shall monitor the temperature once every hour between 6:30 a.m. and 6:30 p.m. The temperature shall be announced over the radio and documented on the Temperature Log If conditions warrant, the Warden may also request additional readings.

[§ III(A):] 1. . . . When the temperature is over 85°F, the Warden shall use the Heat and Humidity Matrix [similar to the NWS Heat Index] to determine the heat index. The heat index shall be used as an indicator of the risk for heat-related injury.

2. At any point when the Heat and Humidity Matrix indicates the possibility of heat exhaustion or heatstroke [i.e., at a heat index of 90°F or above], the Warden shall instruct the appropriate staff to immediately initiate the precautionary measures identified in the Heat and Humidity Matrix [i.e., regular rest breaks, increased water intake, reduced work pace].

3. If guidance is needed, medical staff shall be contacted prior to exposing offenders to extremely hot working conditions to evaluate the hazards of the current temperatures and humidity
4. Offenders shall be provided and required to wear clothing appropriate for the effective temperatures and the hazards imposed by UV radiation (e.g., light-colored hats can be used to an advantage in high heat and direct sunlight).
5. Drinking water shall always be available to offenders in conditions of hot weather. According to individual medical advice, liquids containing sodium may be used depending on an offender's state of acclimatization to hot weather conditions.
- 6 . Newly assigned offenders, who may not be acclimated to the heat, shall be medically evaluated prior to exposure to significant heat stress and closely monitored by supervisors for early evidence of heat intolerance.
7. High water intake . . . shall be enforced.
8. Offenders under treatment with diuretics or drugs inhibiting sweating require special medical evaluation prior to assignment to work in extreme heat.

[§ IV(C):] In [medical emergencies due to] extreme heat conditions, staff shall:

1. Immediately begin an attempt to decrease the offender's temperature by placing the offender in a cool area;
2. Only force oral fluid intake if the offender is conscious and able to safely swallow;
3. Remove heavy clothing or excess layers of clothing; saturate remaining lightweight clothing with water. Position the offender in the shade with air movement past the offender. Fan the offender if necessary to create air movement;
4. If ice is available, place ice packs in armpit and groin areas;
5. Take all of these measures while moving the offender in the most expeditious means available to continue with and obtain proper medical treatment; and

6. Ensure, whenever medical staff are on-site, to continue treatment as directed by the physician or medical staff.

[§ V:] Training

A. Each Warden shall ensure training in the prevention of temperature extreme injury is provided by unit medical staff to all supervisors designated by the Warden. . . . Heat Training shall be completed in May of each year.

...

2. Non-work assigned offenders shall be notified of heat awareness via the dayroom bulletin boards and/or other common use areas

Vermont

VT. DEP'T OF CORR., PROTOCOL 361.01.14, § V(G) (1997)

Inmates on psychotropic medications should not be exposed to sustained elevated temperature or direct sunlight for extended periods of time. Patients on psychotropic medications have increased sensitivity to sunlight and are at higher risk of heat-induced syndromes including heatstroke, hyperthermia and heat prostration. In view of these factors, the following recommendations should be made:

1. When under direct sunlight, inmates should wear protective clothing and/or sunscreen. Provisions should be made for suntan lotions and protective clothing (i.e., shirts) for such inmates.

2. Excessive exhausting activities in the heat of summer should be avoided;

3. An adequate intake of fluid (8–12 glasses of liquid per day) should be maintained to avoid dehydration;

4. The temperature of the SRTP must be monitored regularly and logged on a temperature log in accordance with specific directives issued by the Director of Clinical Services at Central Office. If inmate housing areas exceed 90 degrees Fahrenheit, the following measures must be instituted:

- a. increased ventilation to the area through utilization of fans to improve air flow and reduce room temperature to less than 90 degrees;
- b. provision of increased fluids and ice;
- c. allowance of additional showers to provide cooling;
- d. recommendation to the Superintendent to permit temporary transfer of the inmate to an area of the institution that is more compatible with inmate's clinical status.

Virginia

6 VA. ADMIN. CODE § 15-40-1160(C) (2015)

Air conditioning or mechanical ventilation systems, such as electric fans, shall be provided when the temperature exceeds 85°F [in jails and lockups].

6 VA. ADMIN. CODE § 15-45-10 (2015)

"Appropriate heating" [in private prisons] means temperatures appropriate to the summer and winter comfort zones.

6 VA. ADMIN. CODE § 15-45-870 (2015)

Special housing cells or units [in private prisons] shall be well ventilated, adequately lighted, and appropriately heated and maintained in sanitary conditions at all times. A general log shall be kept and the temperature shall be recorded at least once each shift. Inmates shall be housed in an environment in which the temperature does not fall below 65°F, and when the temperature exceeds 85°F, mechanical air circulation shall be provided.

6 VA. ADMIN. CODE § 15-80-10(B) (2015)

"Climate control" [in local correctional facilities] means temperature appropriate to the summer and winter comfort zones.

6 VA. ADMIN. CODE § 15-80-360 (2015)

All cells [in housing units at secure local correctional facilities] shall be provided with . . . climate control.

6 VA. ADMIN. CODE § 15-80-370 (2015)

All dormitories [in housing units at secure local correctional facilities] shall be provided with . . . climate control.

6 VA. ADMIN. CODE § 15-80-420(B) (2015)

Heat and air conditioning or mechanical ventilation shall be evenly distributed in all rooms [in housing units at secure local correctional facilities] so that a temperature not less than 65°F nor more than 85°F is maintained. Air conditioning or mechanical ventilating systems shall be provided to maintain temperatures of not more than 85°F.

6 VA. ADMIN. CODE § 15-80-430(C)(7) (2015)

[In temporary holding cells or areas in central intake units at secure local correctional facilities,] climate control shall be provided.

6 VA. ADMIN. CODE § 15-80-1270 (2015)

[In lockups at local correctional facilities,] climate control shall meet the requirements . . . [for secure local correctional facilities] in these standards.

Washington

WASH. ADMIN. CODE § 137-28-370(4)(a) (2015)

[(4)(a):] An inmate placed in disciplinary segregation shall be . . . Confined to an environment with healthful temperatures in cells substantially similar to those used for general population.

[(5)(a):] An inmate placed in isolation shall be . . . Confined to an environment with healthful temperatures in cells substantially similar to those used for general population.

WASH. ADMIN. CODE § 137-32-30(1)(a) (2015)

An inmate placed in an intensive management or administrative segregation unit shall, unless safety or security considerations dictate otherwise, be . . . Confined in an adequately . . . ventilated environment at a reasonably comfortable temperature for the season, unless mechanical or other problems prevent such conditions on a temporary basis.

WASH. DEP'T OF CORR., POLICY DOC 890.170 (2012)

[p.2:] POLICY:

I. The Department recognizes the danger associated with outdoor work during periods of extreme heat. This policy is intended to protect workers in outdoor work environments from the potential effects of heat related illness through local procedures and annual training.

II. These requirements apply to workers who will work in a heat exposure environment between May 1 and September 30. For the purposes of this policy, heat exposure environments are outdoor work areas in which workers will be exposed to heat at or above the temperature action levels identified in W[ashington] A[dministrative] C[ode] 296-62-09510 [which defines thresholds for action based on workers' clothing and personal protective equipment].

[specifics of local procedures and training are laid out on pp. 2-3.]

West Virginia

W. VA. CODE R. § 95-1-8 (2014)

[for jails]

[.5:] Temperatures [in all activity areas] shall be maintained appropriate to the summer and winter comfort zones with consideration for the activity performed.

[.9(g):] [All rooms or cells shall have] Temperatures appropriate to the summer and winter comfort zones.

[.10(j):] [All multiple-occupancy rooms shall have] Temperatures appropriate to the summer and winter comfort zones.

[.11(h):] [All segregation rooms shall have] Temperatures appropriate to the summer and winter comfort zones.

W. VA. CODE R. § 95-2-8 (2014)

[for correctional facilities]

[.8.7:] [All rooms or cells shall have] Temperatures that are appropriate to the summer and winter comfort zones.

[.9.10:] [All multiple-occupancy rooms shall have] Temperatures that are appropriate to the summer and winter comfort zones.

[.10.6:] [All rooms in minimum-security areas or facilities shall have] Temperatures that are appropriate to the summer and winter comfort zones.

[.11.8:] [All segregation rooms shall have] Temperatures that are appropriate to the summer and winter comfort zones.

[.23:] Sufficient space shall be provided for equipment needed for . . . ventilating, air conditioning, . . . etc.

W. VA. CODE R. § 95-3-8 (2014)

[for holding facilities]

[.5:] Temperatures [in all activity areas] shall be maintained appropriate to the summer and winter comfort zones with consideration for the activity performed.

[.7.g:] Temperatures are appropriate to the summer and winter comfort zones [in all rooms or cells].

[.8.j:] Temperatures are appropriate to the summer and winter comfort zones [in all multiple-occupancy rooms].

W. VA. CODE R. § 95-3-25 (2014)

[for holding facilities]

[.8.g:] [All holding rooms or cells shall have] Temperatures that are appropriate to the summer and winter comfort zones.

[.9.g:] [All multiple-occupancy rooms shall have] Temperatures appropriate to the summer and winter comfort zones.

W. VA. DIV. OF CORR., POLICY DIR. 203.00, § V(E) (2010)

1. Temperatures in indoor living areas shall be appropriate to summer and winter comfort zones.
2. Temperatures in indoor work areas shall be appropriate to summer and winter comfort zones.