

ENTERED

July 19, 2017

David J. Bradley, Clerk

**UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION**

KEITH COLE, et al,	§	
	§	
Plaintiffs,	§	
VS.	§	CIVIL ACTION NO. 4:14-CV-1698
	§	
BRYAN COLLIER, et al,	§	
	§	
Defendants.	§	

**MEMORANDUM AND OPINION SETTING OUT
FINDINGS OF FACT AND CONCLUSIONS OF LAW**

Introduction.....3

I. Findings of Fact.....4

 A. Procedural Background4

 1. The Plaintiff Classes5

 2. The First Preliminary Injunction.....6

 B. The Evidence in the Record.....7

 1. The Parties7

 2. The Wallace Pack Unit8

 3. The Fact Witnesses10

 4. The Expert Witnesses16

 5. Overview of the Factual Issues20

 C. The Outdoor and Indoor Heat Index at the Pack Unit22

 D. The Effects of Heat on the Human Body26

 1. The Effects of Heat on an Individual with Comorbidities32

 2. The Effects of Heat on an Individual Taking Certain Medications35

 3. The Effects of Heat on an Individual with Multiple Comorbidities
 and/or Who Takes Certain Medications37

 4. The Heat Index Threshold for Heat Illness39

E.	Conditions in TDCJ Facilities, Including the Pack Unit, Prior to 2013.....	42
F.	Heat-Related Deaths and Illnesses in TDCJ Facilities.....	43
G.	The Current Conditions in the Pack Unit.....	45
1.	Heat Mitigation Measures.....	45
2.	Heat Wave/Extreme Temperature Policy.....	67
3.	Heat-Related Illnesses in the Pack Unit.....	70
H.	The Proposed Remedies.....	72
1.	Air Conditioning.....	73
a.	The Effectiveness of Air Conditioning.....	73
b.	Pre-Existing Air Conditioned Beds Within TDCJ.....	74
c.	Medical Providers’ Inability to Recommend Air Conditioned Housing.....	75
d.	The Installation and Cost of Air Conditioning at the Pack Unit.....	77
2.	Window Screens.....	79
3.	Creation of a Heat Wave Policy for the Pack Unit.....	81
4.	Other Remedies.....	81
II.	Conclusions of Law.....	82
A.	The Legal Standard.....	82
B.	Likelihood of Success on the Merits.....	83
1.	The Constitutional Requirements.....	83
2.	Conditions of Confinement that Violate the Eighth Amendment.....	83
a.	Substantial Risk of Serious Injury or Death.....	83
b.	Deliberate Indifference.....	86
C.	Irreparable Injury.....	91
D.	Balancing the Harms.....	92
E.	The Public Interest.....	93
F.	Bond.....	94
III.	Remedy.....	94
IV.	Conclusion.....	99

Introduction

Plaintiffs in this class action request relief from conditions in a state prison. In turning to this subject, the Court is acutely aware of both the limitations of its own competence, and the importance of ensuring that constitutional treatment is accorded one of society's most discrete and disenfranchised minorities.

In a perfect world, the safety and good health of prisoners would be assured by Solomonic men and women who had simultaneous expertise in the corrections industry, construction, safety engineering, medicine, and law. In the world we inhabit, however, judges are asked to make judgments and enforce decisions because courts are, in our government's architecture, where individuals and institutions bring constitutional issues. The task is one that any court must approach with the utmost humility. Still, the fact that a case is difficult does not lead to the conclusion that a decision should be avoided.

The immediate issue is whether a preliminary injunction should be entered to redress conditions that are alleged to create an unconstitutional risk of heat-related illnesses at the Wallace Pack Unit, a prison operated by the Texas Department of Criminal Justice ("TDCJ"). Although no heat-related deaths have been reported at the Pack Unit, at least 23 men have died because of heat at TDCJ facilities from 1998 to today. For reasons that will be set forth, the Court does find that a preliminary injunction should issue to ensure that prisoners at the Pack Unit are not deprived of their Eighth Amendment right to be free of cruel and unusual punishment.

I. Findings of Fact

A. Procedural Background

Plaintiffs filed this lawsuit on June 19, 2014. Docket Entry No. 1. Initially, Plaintiffs consisted of four men—David Bailey, Marvin Yates, Keith Cole and Nicholas Diaz—incarcerated at the Pack Unit. The Pack Unit is a Type-I Geriatric prison, which means it is a single-level facility with wheelchair accommodations. *Id.* at 2-3; Docket Entry No. 326 at 12. The Pack Unit is owned and operated by TDCJ. Docket Entry No. 326 at 12.

Plaintiffs have sued Defendants Bryan Collier, the Executive Director of TDCJ, and Robert Herrera, the warden of the Pack Unit, under 42 U.S.C. § 1983, alleging that the conditions of confinement in the Pack Unit violate Plaintiffs' Eighth Amendment right to be safe from conditions of confinement that cause a substantial risk of serious injury or death. Docket Entry No. 629 at 42-43. A smaller subset of the plaintiffs—those who claim to have a disability—also alleges that TDCJ is violating its right to be reasonably accommodated under the Americans with Disabilities Act (“ADA”) and Rehabilitation Act (“RA”). *Id.* at 43-45.

Plaintiffs moved for class certification, and in May 2016, the Court held a four-day evidentiary hearing. On June 14, 2016, the Court granted Plaintiffs' motion for class certification, certifying a general class and two subclasses. Docket Entry No. 473. Around the same time, Plaintiffs also moved for a preliminary injunction requiring the Pack Unit to provide safe drinking water, to adopt a formal policy to address the dangers of heat waves, to monitor regularly the temperatures inside the Pack Unit, and to amend its policy regarding respite areas—locations that prisoners can go to for relief from the heat. Docket Entry No. 434. The Court considered evidence on the Motion during the four-day evidentiary hearing. On June 21, 2016, the Court entered a preliminary injunction ordering the Pack Unit to provide water that

conformed to the Environmental Protection Agency (“EPA”) maximum contaminant level requirements for arsenic. Docket Entry No. 477. Soon thereafter, the Court denied Defendants’ Motion for Summary Judgment. Docket Entry No. 533.

On May 1, 2017, Plaintiffs filed a motion for a second preliminary injunction, and on May 22, 2017, Defendants responded. Docket Entry Nos. 620 & 641. The Court held a nine-day hearing in June 2017. Plaintiffs ask this Court to order TDCJ to lower the indoor temperatures at the Pack Unit to below 88 degrees¹ for the summer of 2017. They contend that the extreme heat they endure at the Pack Unit is dangerous and damaging to their health, and that Defendants’ mitigation measures are wholly inadequate to counter the high temperatures. As a result, Plaintiffs claim, the heat creates an unconstitutional condition of confinement. Docket Entry No. 620. If the Court fails to order Pack Unit to lower the temperatures, Plaintiffs request various forms of alternate relief, including mandating three hours of scheduled respite time, installing portable “cooling units” in the inmate housing areas, monitoring each person’s water consumption, and requiring medical staff to conduct “wellness checks” for heat-sensitive people. *Id.* at 3-13. Defendants argue, primarily, that the mitigation measures they have implemented since 2015 have eradicated any potential constitutional violation caused by the heat in the Pack Unit. Docket Entry No. 641 at 13-14.

1. The Plaintiff Classes

In its previous ruling granting Plaintiffs’ motion for class certification, the Court certified three classes. Docket Entry No. 473. First, the Court certified the General Class, which is defined as:

All inmates who currently are, or in the future will be, incarcerated at the Pack Unit, and who are subjected to TDCJ’s policy and practice of failing to regulate high indoor heat index temperatures in the housing areas.

¹ All temperatures noted are in Fahrenheit.

Id. at 2-3. The Court also certified two subclasses. The Heat-Sensitive Subclass is defined as:

All people who are incarcerated at the Pack Unit, or in the future will be, that are subjected to TDCJ's policy and practice of failing to regulate high indoor heat index temperatures in the housing areas, and either: (1) have a physiological condition that places them at increased risk of heat-related illness, injury, or death (including, but not limited to, suffering from obesity, diabetes, hypertension, cardiovascular disease, psychiatric conditions, cirrhosis of the liver, chronic obstructive pulmonary disease, cystic fibrosis, asthma, sweat gland dysfunction, and thyroid dysfunction); or, (2) are prescribed an anticonvulsant, anticholinergic, antipsychotic, antihistamine, antidepressant, beta blocker, or diuretic; or (3) are over age 65.

Id. at 3. The Disability Subclass consists of:

All people incarcerated at the Pack Unit, or who will be in the future, that are subjected to TDCJ's policy and practice of failing to regulate high indoor heat index temperatures in the housing areas and suffer from a disability that substantially limits one or more of their major life activities and who are at increased risk of heat-related illness, injury, or death due to their disability or any medical treatment necessary to treat their disability.

Id. Defendants appealed the grant of class certification. The Fifth Circuit has yet to issue its ruling.

2. The First Preliminary Injunction

On June 21, 2016, the Court entered a preliminary injunction finding that the drinking water at the Pack Unit contained between two and four-and-a-half times the amount of arsenic permitted by the EPA, and ordering the Pack Unit, for a defined period, to provide water that conformed with the EPA maximum contaminant level requirements for arsenic. Docket Entry No. 477. Plaintiffs had also asked the Court to order that each inmate receive three hours of scheduled respite every day, and to order Pack Unit to measure, daily, the temperature inside each of the housing areas. Docket Entry No. 434. The Court, at that time, declined to order such

relief. Docket Entry No. 477 at 29-30. Defendants appealed the Court's order, and their appeal was dismissed as moot. Docket Entry No. 594.

B. The Evidence in the Record

This motion for a second preliminary injunction requires balancing the expediency demanded by the request for emergency relief with a full and fair consideration of the voluminous record. The parties submitted hundreds of pages of exhibits. Fifteen witnesses testified at the nine-day hearing, including four expert witnesses. Additionally, Plaintiffs have incorporated by reference the testimony and evidence presented at the 2016 four-day hearing. This consisted of testimony from eight witnesses, including three expert witnesses. Docket Entry No. 477. Previously, the Court had visited the Pack Unit.

The Court reviews the factual record under the applicable legal framework to resolve the disagreements between the parties, and to enter the findings of fact and conclusions of law.²

1. The Parties

As described above, the Court certified a General Class and two subclasses in June 2016. The General Class includes every person currently incarcerated at the Pack Unit, and the two subclasses include subsets of that population. The named Plaintiffs in the case are Keith Cole, Jackie Brannum, Richard King, Michael Denton, Fred Wallace, and Marvin Ray Yates.

The defendants in this case are Bryan Collier, the Executive Director of TDCJ, and Robert Herrera, the Warden of the Pack Unit, both of whom are sued in their official capacities. TDCJ is also a defendant.

² Any findings of fact that are also, or only, conclusions of law are so deemed. Any conclusions of law that are also, or only, findings of fact are so deemed.

2. The Wallace Pack Unit

The Wallace Pack Unit is one of 109 custodial facilities operated by TDCJ across the state of Texas.³ Docket Entry No. 326 at 12. It began housing prisoners in 1983. *Id.* The facility has wheelchair accommodations, 60 wheelchair-accommodated cells, and a 12-bed infirmary. *Id.* While the facility does house numerous older men, those who are unable to engage independently in the activities of daily living are assigned to assisted living and/or long-term inpatient care, in other facilities. *Id.* These facilities include type-II or type-III Geriatric facilities, which are required to have air conditioning. Defs.' Ex. 109 at 1. TDCJ has one type-II Geriatric facility and one Type-III Geriatric facility. Hearing Tr. 5 at 41.

The Pack Unit houses approximately 1,450 men, and has approximately 334 employees. Docket Entry No. 326 at 12. The unit has, among other facilities, a cattle farm and an agricultural farm. *Id.* There is an air conditioned infirmary, and at least one medical provider is present 24 hours a day, seven days a week. *Id.* All of the administration offices are air conditioned, as are the visitation areas, the education department, the barbershop, and a small portion of the craft shop. *Id.* at 13-14.

The Pack Unit has three separate housing areas: the main building, the expansion dormitory, and the trusty camp. *Id.* at 13. Each of these housing areas is set up in a dormitory style, with open-air cubicles for each person. *Id.* Each dormitory has a "dayroom," with tables, chairs, and televisions. Pls.' Ex. 2. None of the dormitories contains conditioned air.⁴ Docket Entry No. 326 at 12. Within the main building, four dormitories extend from either side of a main hallway. Pls.' Ex. 1 These dormitories are labeled Dormitory A, Dormitory B, Dormitory

³ TDCJ typically incarcerates more than 150,000 people at any given time. Hearing Tr. 6 at 51.

⁴ The Pack Unit does contain 40 air conditioned beds in a "work unit," which is an off-site prison location that houses only trusty inmates. Additionally, twenty segregation cells and twelve infirmary beds at the Pack Unit are air conditioned. Docket Entry No. 721 at 3.

C, and Dormitory D. *Id.* Each dormitory is divided into four sub-dormitories, which are labeled numerically, from 1 to 16. Hearing Tr. 3 at 17. Two of those dormitories are wheelchair accessible, and contain 30 cubicles each. *Id.* at 29; 38-39. The other dormitories house approximately 54 men each. Hearing Tr. 4 at 227. Each dormitory contains toilets, and all of the main-building dormitories use a communal shower space with 72 shower heads. Hearing Tr. 3 at 31. The expansion dormitory is housed outside of the main building, but within the perimeter gates. *Id.* at 34. This dormitory holds approximately 111 men, and contains showers within the dormitory. *Id.* The trusty camp has a 321-person capacity, and is located outside of the main perimeter fence. It also contains its own showers. *Id.* at 15, 35.

The parties stipulated that, as of September 18, 2014,⁵ the Pack Unit contained 728 men with hypertension (high blood pressure), 212 men with diabetes, 142 men with coronary artery disease, 111 obese men, 53 men with a psychiatric condition, 66 men prescribed an anti-psychotic medication, 22 men with cirrhosis of the liver, 84 men with chronic obstructive pulmonary disorder (“COPD”), 189 with thyroid dysfunction, and 113 with asthma. Docket Entry No. 721 at 3-4. There are 188 men in the Pack Unit over the age of 65. *Id.* Many of these conditions overlap within one person. However, all of the conditions, individually, cause heat sensitivity, as will be discussed in greater detail below.⁶ The Pack Unit also houses a number of men who are young and healthy. These men work in the fields or the kitchen, help carry drinking water to the housing areas, and are integral to the functioning of the Pack Unit as a whole. Hearing Tr. 3 at 21-23.

⁵ The Court has not been provided with more recent numbers. However, the parties stipulated that the numbers obtained in 2014 are typical for the Pack Unit. Docket Entry No. 721 at 3-4.

⁶ All of the individuals listed above are included in the “Heat-Sensitive Subclass” certified by this Court in 2016. Not all are included on the Heat-Restriction list produced by the University of Texas Medical Branch, the medical provider for the Pack Unit. Hearing Tr. 4 at 120.

3. The Fact Witnesses

The fact witnesses testified about the conditions in the Pack Unit, specifically relating to extreme heat in the summers, and to the mitigation measures that have been implemented.

The 2017 Preliminary Injunction Hearing

Richard King is a named Plaintiff in this case. He is a 71-year-old man incarcerated at the Pack Unit. He has been in TDCJ custody for 28 years, and at the Pack Unit for six years. He currently works in the craft shop in the Pack Unit. Mr. King suffers from high blood pressure, diabetes, and obesity. He takes Furosemide and Carvedilol, two medications included on the Correctional Managed Health Care Committee's policy listing medications that interfere with the body's ability to regulate temperature.⁷ Additionally, in 2010 Mr. King suffered from a viral infection that attacked his nerves, leading to the loss of 25-30 percent of the use of his legs. He currently resides in the expansion dormitory of the Pack Unit, also known as E Dormitory. Mr. King testified that the heat in the E Dormitory during the summer is like "walk[ing] out to your car in the middle of the summertime." Hearing Tr. 1 at 16. He stated that, in the summer, he sweats profusely, his energy level drops, his appetite diminishes, and he finds it difficult to function normally. Additionally, it is difficult for him to write letters because sweat drips all over his paper, and when he lies down, sweat pools in his eyes. He finds that it is often cooler to lie on the concrete floors than in his bunk, because the personal fan that he owns blows hot air and does not have a cooling effect. He also testified about mitigation measures that the Pack Unit has implemented, including a cool-down shower in his dormitory, ice water, respite areas, and

⁷ Pls.' Ex. 47 at 7. The Correctional Managed Health Care Committee is a statutorily-created committee "responsible for developing, implementing, and monitoring the correctional managed health care services for offenders confined in institutions operated by TDCJ." *McCollum v. Livingston*, No. 4:14-CV-3253, 2017 WL 608665, at *2 (S.D. Tex. Feb. 3, 2017).

training about heat-related illnesses. He stated that these measures create temporary relief from the heat. Hearing Tr. 1 at 3-64.

Jackie Brannum is also a named Plaintiff, age 63, and is incarcerated at the Pack Unit. He has been in TDCJ custody for approximately 22 years, and has been at the Pack Unit for 16 years. Like Mr. King, Mr. Brannum spends much of his time in the craft shop. He suffers from high blood pressure, diabetes, obesity, and schizoaffective disorder. Mr. Brannum takes Risperidone, Nortriptyline, Propranolol, and Amlodipine, Lisinopril, Pravastatin, Prozac, and Carbamazepine, all of which are listed as “drugs associated with heat stress” by the Correctional Managed Health Care Committee (“CMHCC”). Defs.’ Ex. 4 at 7. He also uses a walker because of a pinched nerve in his back that makes walking difficult. He currently resides in dormitory D16, within the main building. Mr. Brannum has not been allowed to work after he passed out while working in the kitchen several years ago. Although Mr. Brannum was not diagnosed with a heat-related illness at that time, he notes that it was hot in the kitchen, and that he was placed in a cool-down area of the infirmary and told to drink cold water. He compares the heat in his housing area to getting into a hot box in the sun during the summertime. The heat makes him feel weak, dizzy, and nauseated. His heart feels like it beats faster, he has difficulty breathing, and he gets headaches. He testified that he often sleeps on the concrete floor during the summer, because the concrete is cooler than his bunks; however, some officers have told him he cannot sleep on the floor. Mr. Brannum also complained of insects that get in through the openings in the wire screens that cover the windows, and which bite him. Finally, Mr. Brannum testified about his attempts to use the respite areas at the Pack Unit. He stated that, though he has used the respite areas several times, he has been shuffled between various areas; he has been made to stand with his nose to the wall in one respite area, despite his mobility impairment; he has been

told that he could not go to respite because it was full; and he has been told that in order to stay in respite in the infirmary, he must submit to a core (rectal) temperature reading. Hearing Tr. 1 at 67-118.

Thomas Pennington is a 52-year-old man incarcerated at the Pack Unit. He has been in TDCJ for 28 years, and has been in the Pack Unit for the past 11 years. Mr. Pennington has high blood pressure, diabetes, and deep vein thrombosis (which causes blood clots in his legs), and is morbidly obese. He must use a cane to walk. He also suffers from sleep apnea, which interferes with his breathing at night. He uses a Continuous Positive Airway Pressure (“CPAP”) machine to sleep, but has problems during the summer months because the sweat his body produces makes it difficult to keep the mask as tight as it needs to be. Mr. Pennington takes Metoprolol and Furosemide, two medications included on CMHCC’s list of drugs associated with heat stress. Mr. Pennington currently resides in dormitory B6, which has a Power Breezer that TDCJ recently installed. Mr. Pennington testified that the Power Breezer does nothing to help with the temperature in his dormitory. He spoke about his experiences using the respite areas: while he has never been denied access to respite, he has been discouraged by the constant movement and standing required of him. He stated that, in the lower administration hallway, he is required to stand, which is difficult for him. In the barbershop, he may be able to stay for 15-20 minutes before he is told to go to the infirmary, and is only allowed to stay in the infirmary for a short period of time as well. About three years ago, he was sent on a stretcher to the infirmary because he began feeling sick, had difficulty breathing, and felt nauseated as a result of the heat. In June 2017, he felt the same symptoms when he was leaving the inmate cafeteria, and had to go to the infirmary to cool down. Finally, Mr. Pennington testified about the insects that come into the housing areas and bite him and the other inmates. Hearing Tr. 1 at 119-159.

Carlos Huerta is a 30-year-old man incarcerated at the Pack Unit. He has been in TDCJ for three-and-a-half years, and in the Pack Unit for the past two years. He lives in the upstairs section of the expansion dormitory. Mr. Huerta suffers from high blood pressure and is obese. He takes Atenolol, which is on CMHCC's list of medications that interfere with heat regulation. The heat causes him to feel dizzy, have headaches, and get frustrated. Mr. Huerta testified that he witnessed a Correctional Officer collapse in the dormitories on a very hot day. He, too, was diagnosed with heat exhaustion last summer. He testified that he was feeling hot in his dormitory, so he went outside. Mr. Huerta was walking⁸ outside, which is something he's been told to do to lose weight, and he felt worse. He went back into his dormitory, drank water, took a cold shower, and got in front of the fan, but still did not feel better. Finally, he asked to go to medical, where his core body temperature was found to be 102.3 degrees; he was sent to the hospital, and was diagnosed with heat exhaustion. Finally, Mr. Huerta testified about his one attempt to use the respite areas; he stated that he did not like it, because some of the officers would limit how long inmates could stay depending on the officer's opinion of when they had sufficiently cooled off. Hearing Tr. 1 at 161-199.

Keith Cole is a named Plaintiff in this case. He is a 63-year-old man incarcerated in the Pack Unit. He has been in TDCJ for more than 23 years, and has lived in the Pack Unit for the past six years. He currently resides in dormitory B6. Mr. Cole suffers from chronic cardiovascular disease, high blood pressure, high cholesterol and diabetes. Mr. Cole takes many medications, three of which are on CMHCC's list of medications that cause heat stress:

⁸ Defendants contend that Mr. Huerta was in fact running outside, which is what the Incident Report states. The Court does not make credibility determinations at this point, but is merely summarizing the witness' testimony.

Amlodipine, Metoprolol, and Hydrochlorothiazide.⁹ He testified that, since the lawsuit was filed, conditions have improved in the Pack Unit: ice water is more readily available, cool-down showers have been implemented, and he regularly accesses air conditioned respite areas. However, he stated that most men living at Pack Unit are not as assertive as he is, and would not demand access to respite, as he feels he must. Indeed, he estimated that only 15 to 20 men use respite on a regular basis. Furthermore, Mr. Cole maintained that, even with these measures in place, he and others are still at risk of harm from the heat in the housing areas. He stated that, on a daily basis in the summer, he feels dizzy, nauseated, and short of breath. Additionally, he is bothered by mosquitoes and other insects that get into the dormitory areas through the window screens. Finally, Mr. Cole testified that the Power Breezer in his dormitory does nothing to cool the air, and has no cooling effect unless he is standing directly in front of it. Hearing Tr. 1 at 199-246.

Robert Herrera has been the Senior Warden of the Pack Unit since 2010. He started his career as a correctional officer in TDCJ at the age of 18, and has worked his way through the ranks to become a warden. Defendants offered Warden Herrera's testimony regarding the functioning of the Pack Unit on a daily basis, and the various security concerns that he must consider. He also spoke about the mitigation measures that have been implemented at the Pack Unit, and their effectiveness in combating heat illness. Hearing Trs. 3 at 3-114, 4 at 2-246, 5 at 3-21.

Phyllis McWhorter is a registered nurse and the manager for TDCJ's Mental Health Services Liaison and Utilization Review. Prior to December 2016, Ms. McWhorter was the manager of the Health Services Liaison, focusing on heat-related illnesses in all TDCJ facilities.

⁹ As Mr. Cole did not testify to the names of these medications, they have been gleaned from his medical documents. Pls.' Ex. 22.

In this role, she collected reports of heat-related illnesses as they were submitted by employees at the various facilities in TDCJ. She testified as to the number of reports of heat-related illness at the Pack Unit between the years of 2010 and 2016, and the number of those illnesses occurring indoors versus outdoors. She also spoke to the ability of medical providers to request that an inmate be assigned to a Type II or Type III Geriatric Unit, both of which are air conditioned. Hearing Tr. 5 at 25-98.

Cody Ginsel is currently the Division Director for the Private Facilities Contract Monitoring Oversight Division. His prior position in TDCJ was as Deputy Director of Management Operations in the Correctional Institutions Division. Before that, he was a warden or assistant warden in TDCJ for 13 years. Mr. Ginsel spoke to the financial ability of TDCJ to air condition the housing areas of the Pack Unit. He also testified about the heat mitigation policies that have been designed by TDCJ and their implementation in the Pack Unit. Finally, Mr. Ginsel reviewed the Incident Command System, which is the system that TDCJ alleges to be a heat wave policy. Hearing Trs. 5 at 99-204, 6 at 2-244.

Kim Farguson is the Director of Maintenance in the Facilities Department of TDCJ. He testified that he has been working for TDCJ for 20 years, and has a mechanical license to work in the fields of heating, air conditioning, natural gas piping, and sheet metal, among others. Mr. Farguson testified as to the electrical capacity in Pack Unit, and its ability to accommodate the air conditioning units proposed by Plaintiffs. He also prepared a report about the estimated cost of implementing many of Plaintiffs' other proposed remedies. Hearing Tr. 8 at 79-120.

LaMorris Marshall is the Captain of correctional officers at the Pack Unit. He has worked for TDCJ for the past 21 years. Mr. Marshall testified about the mitigation measures that have been implemented in the Pack Unit, and the inmates' knowledge of these measures. He also

testified as to two incidents that occurred during the first week of the hearing, wherein approximately 60, and then 150, inmates simultaneously requested respite. These incidents were significant because, prior to those two days, the largest number of inmates who had requested respite at the same time was approximately 20. Hearing Tr. 9 at 3-90.

Michael Denton is a named Plaintiff in this case. He is 39, has been living at the Pack Unit for more than 10 years, and currently resides in the expansion dormitory. He does not have any medical conditions that impact his body's ability to regulate its temperature, nor is he taking any medications that have detrimental effects. He works in the kitchen at the Pack Unit. During the summers at the Pack Unit, Mr. Denton suffers from headaches, dizziness, and extreme perspiration. He was one of the approximately 60 men who requested respite simultaneously, and testified about that experience. Hearing Tr. 9 at 91-126.

The 2016 Class Certification/Preliminary Injunction Hearing¹⁰

Cody Ginsel testified at both the 2016 and the 2017 hearings. In 2016, he was still the Deputy Director of Management Operations in the Correctional Institutions Division of TDCJ. Mr. Ginsel testified about issues relating to the arsenic levels in the water at the Pack Unit, which was the subject of the 2016 hearing. However, he also testified about the heat mitigation policies at the Pack Unit. Thus, for the purposes of this opinion, his testimony in 2017 was substantially similar to the testimony he gave in 2016. Docket Entry No. 459 at 14-130.

4. The Expert Witnesses

The 2017 Second Preliminary Injunction Hearing

Ron Brown was presented by Plaintiffs to testify under Rule 702 of the Federal Rules of Evidence on the possibility of air conditioning the Pack Unit, as well as the associated cost. Mr.

¹⁰ Witnesses who testified solely about arsenic levels in the water at the Pack Unit are not included in the summary. They have not been considered in the Court's analysis of Plaintiffs' second request for preliminary injunction.

Brown testified that he is registered by the State of Texas as a mechanical engineer, and is also certified in electrical, automatic controls, and energy management. He was licensed as a professional engineer in 1979, and has been practicing as a mechanical engineer ever since. He has been registered as an engineer in 26 states, and has spent the majority of his career designing air conditioning systems for various types of structures. In preparing his opinion in this case, Mr. Brown toured the Pack Unit, reviewed blueprints and other structural documents, and performed various calculations using an engineering software. Hearing Tr. 2 at 2-93.

Eldon Vail also testified for Plaintiffs under Rule 702. Mr. Vail spent his career in the Washington Department of Corrections. He started as a correctional officer before becoming the superintendent of three different facilities. He worked his way up through the administration, became the deputy director for seven years, and then in 2007 became the head of the agency until 2011, when he retired. Since that time, he has been consulting on correctional issues for the U.S. Department of Justice and other entities, as well as serving as an expert in litigation. Mr. Vail testified about the importance of air conditioning prisons in hot climates, and about his experience retrofitting two prisons in the state of Washington. He also testified about other states in the U.S. that require cooled air in their facilities, as well as the mitigation measures in place at the Pack Unit. Mr. Vail toured the Pack Unit and interviewed several men incarcerated there in preparing his opinion for this case. Hearing Tr. 2 at 96-280.

Dr. Dean Rieger was presented by Defendants as a Rule 702 witness in corrections. Dr. Rieger has a medical degree and a master's degree in public health. Over the course of his career, Dr. Rieger has been the medical director for a women's facility in Michigan, the medical director for the state prison of southern Michigan, the state regional medical director for southeast Michigan, and the medical director for the Indiana Department of Corrections. From 2006-2016,

Dr. Rieger was the Chief Medical Officer and Corporate Medical Director for Correct Care Solutions, a private managed healthcare company that focuses on correctional healthcare. Dr. Rieger testified about the effects of heat stress on the human body, the compounding effects caused by certain conditions or medications, and the mitigation measures in place at the Pack Unit. Dr. Rieger testified that he has earned approximately \$40,000 to \$45,000 through his work for TDCJ in this and other heat-related cases. Hearing Tr. 7 at 2-173.

Frank Traknyak also testified as a Rule 702 witness for Defendants. He is an engineer, and owns a company called Trak Engineering, which focuses on mechanical, electrical and other types of engineering. About 60 percent of Mr. Traknyak's professional focus is on heating and air conditioning, and he has designed thousands of systems. Mr. Traknyak testified as to the cost of installing permanent and temporary air conditioning systems in the housing areas of the Pack Unit. In coming to his conclusions, Mr. Traknyak visited Pack Unit, reviewed drawings, and performed various calculations using an engineering software. Hearing Trs. 7 at 181-208, 8 at 2-78.

The 2016 Class Certification/Preliminary Injunction Hearing

Dr. Susi Vassallo testified as a Rule 702 witness for Plaintiffs at the hearing in 2016. Dr. Vassallo is a practicing physician, board certified in emergency medicine and medical toxicology. She is licensed in New York and Texas, and is a professor of emergency medicine at the New York University School of Medicine. She is also on faculty at Dell Medical School, the new medical school for the University of Texas at Austin. Dr. Vassallo is a specialist in thermoregulation—the capacity of the body to maintain the temperature of 98.6 degrees. She is also board certified in correctional health by the National Commission on Correctional Health Care. Dr. Vassallo testified about the risk of heat-related illnesses for the men incarcerated in the

Pack Unit, and the effectiveness of the heat mitigation measures as compared to the effectiveness of air conditioning. She expounded on the effects of heat on the human body, as well as the effects of heat on individuals who have comorbidities, or take medications that impede their ability to thermoregulate. Docket Entry No. 465 at 29-226.

Dr. Michael McGeehin was presented by Plaintiffs as a Rule 702 witness. Dr. McGeehin spent much of his career as the Division Director for the Division of Environmental Hazards and Health Effects at the United States Centers for Disease Control and Prevention. He received his doctorate degree in environmental epidemiology, and has published several peer-reviewed epidemiological articles related to heat. Dr. McGeehin testified about various populations' risks of heat-related illness. He also spoke to the effectiveness of different heat mitigation measures. Docket Entry No. 460 at 7-157.

Dr. Dean Rieger testified at both the 2016 and 2017 hearings on behalf of Defendants. His credentials are detailed above; his testimony in 2016 was substantially similar to the testimony given in 2017. Docket Entry No. 466 at 4-135.

Dr. Kathryn Means testified on behalf of Defendants as a Rule 702 witness. Dr. Means is board certified in hospice and palliative medicine. She has practiced as a primary care physician, but has mostly focused on geriatrics. In 2009, she began working for TDCJ as a consulting physician in the Health Services Division. After the summer of 2011, Dr. Means was tasked with reviewing the autopsies of the men who died from heat-related illness. As an expert in this case, Dr. Means testified about the risk to the named Plaintiffs of heat illness, and spoke generally about the risk of heat illness faced by all individuals living at the Pack Unit. Dr. Means reviewed extensive literature relating to heat-related illness, reviewed the medical records of the named Plaintiffs in the case, and reviewed the medical records of 22 heat related illnesses that

had occurred in TDCJ. She was compensated at the rate of \$300 per hour, and as of April 1, 2016, had been paid \$206,000. At the time that she testified, Dr. Means was a defendant in two lawsuits stemming from the deaths of two individuals in TDCJ from heat-related illness during the summer of 2012. Because TDCJ was her employer when the acts alleged in the lawsuits occurred, TDCJ was covering the cost of Dr. Means' legal defense, and will pay any judgment against her. Docket Entry No. 466 at 135-257.

The Court finds that Drs. Vassallo, McGeehin, Rieger, and Means meet the Rule 702 requirements to testify as to the effects of heat on the human body, and on populations as a whole. The Court also finds that Mr. Brown and Mr. Traknyak are qualified to testify as experts of mechanical engineering, specifically with regard to air conditioning. Finally the Court finds that Eldon Vail meets the requirements to testify as an expert in corrections.

5. Overview of the Factual and Legal Issues

There is little dispute that the heat in the housing areas of the Pack Unit during the summer months could violate Plaintiffs' constitutional right to conditions of confinement that are free from a substantial risk of serious harm or injury. The parties' dispute focuses on the effectiveness of TDCJ's mitigation measures in reducing that risk to an acceptable level.

In sum, TDCJ avers that its mitigation measures, which include the constant provision of ice water, both industrial and personal fans, cool-down showers, access to respite areas, wellness checks, and the training of both correctional officers and inmates on the recognition of heat-related illnesses, have successfully reduced the number of heat-related illnesses in the Pack Unit. Plaintiffs dispute that all of the inmates at the Pack Unit know they have access to respite areas at any time of day or night, and further contend that the Pack Unit could not accommodate the numbers of inmates who would want to take advantage of these respite areas. Plaintiffs also

assert that correctional officers at the Pack Unit are not, in fact, conducting wellness checks, but are merely continuing the pre-existing practice of conducting security checks, which do not assess the inmates' well-being. Plaintiffs argue that an unconstitutional risk of heat-related illness remains, and that the only way to reduce this risk is to air condition the housing areas. This is especially true, according to Plaintiffs, for individuals with heat sensitivities.

For the reasons set out below, the Court finds and concludes that the mitigation measures put in place by TDCJ are insufficient to combat the substantial risk of serious injury or death faced by the inmates at the Pack Unit during the summer months. Since the 12 heat-related deaths in 2011 and 2012, TDCJ has implemented, and attempted to implement, many of the mitigation measures discussed by the Fifth Circuit in *Ball v. LeBlanc*, 792 F.3d 584, 599 (5th Cir. 2015). While these measures have achieved various levels of effectiveness, they do not reduce the substantial risk of heat-related illness faced by all of the men at the Pack Unit, and particularly not the men with heat sensitivities. Although Pack Unit officials state that they have made all of the air conditioned spaces available as respite areas, the testimony of Plaintiffs and of Pack Unit officials reveals that these respite areas can handle only a fraction of the men living at Pack Unit, and even then, the men are often forced to stand, not talk, and move quickly from one respite area to another. Furthermore, the testimony of Plaintiffs and Pack Unit officials belies TDCJ's claim that wellness checks are being conducted for those with heat sensitivities. Instead, it is clear that there is no difference between the security checks that have always been done at the Pack Unit, and the wellness checks that TDCJ claims are being performed. Thus, two of the major mitigation measures touted by TDCJ are ineffectively implemented. The other measures are either entirely ineffective, or are somewhat effective but still insufficient.

The Court is particularly troubled by Defendants' seeming indifference to heat-sensitive inmates. It finds that this indifference has permeated all aspects of Defendants' handling of extreme heat in the summers, from failing to consider the installation of air conditioning after 23 deaths occurred from heat-related illness, to failing to notify prison officials and inmates when heat advisories have been issued, to placing Power Breezers in a high-humidity environment, despite Defendants' own expert opinion that Power Breezers will be ineffective, and even harmful, in these conditions. In some cases Defendants' actions have risen beyond indifference to obstruction, such as when, after this lawsuit was filed, Warden Herrera ordered his staff to stop measuring the indoor heat index during the summer months.

The Court finds and concludes that, based on the credible, reliable evidence in the present record, Plaintiffs are likely to succeed on the merits of their Eighth Amendment claim that the conditions of confinement in the Pack Unit create a substantial risk of serious injury or death. The Court does not reach Plaintiffs' ADA and RA claims, as insufficient evidence has been presented for the Court to determine the likelihood of success as to those claims. Plaintiffs are entitled to a preliminary injunction, as set out in detail below.

C. The Outdoor and Indoor Heat Index at the Pack Unit

Texas is famously hot, and the Pack Unit is no exception. The Pack Unit is located five miles south of Navasota, Texas, about 70 miles northwest of Houston, Texas, in the southeastern part of the state. Pls.' Exs. 3 & 4. Officials at the Pack Unit monitor the outdoor heat index on a daily basis. The heat index is the combination of the temperature and relative humidity, and is a better indication of how the body "feels" heat than air temperature alone. Docket Entry No. 340

18 at 7. The heat indices at the Pack Unit during the summer months are represented in the following chart:¹¹

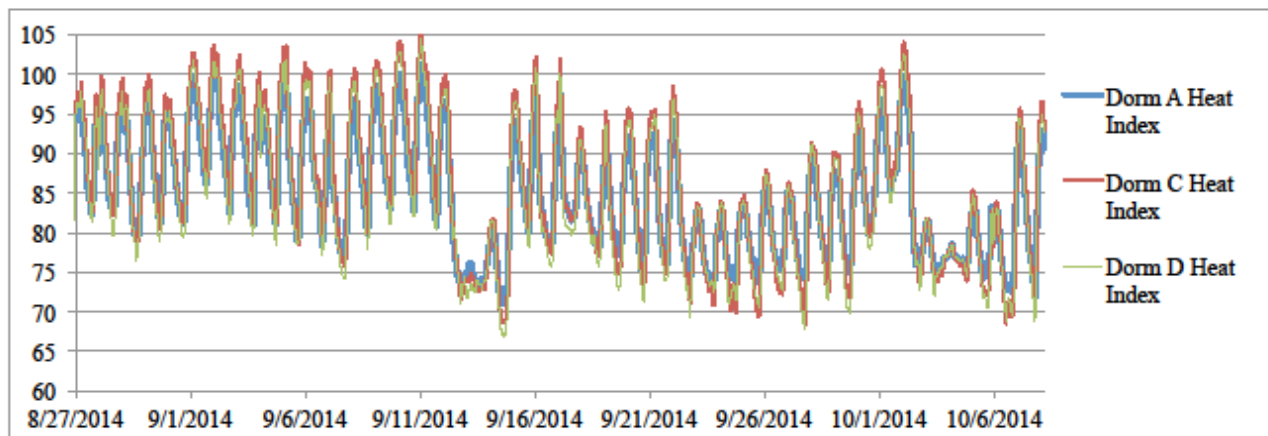
**Outdoor Heat Index at the Pack Unit
Heat Index Highs (2011-2016)**

Year	Number of Days: High Over 100°F	Number of Days: High 90-99°F	Number of Days: High 80-89°F
2011	74	16	1
2012	45	43	2
2013	73	16	3
2014	34	47	9
2015	11	71	9
2016	13	55	13

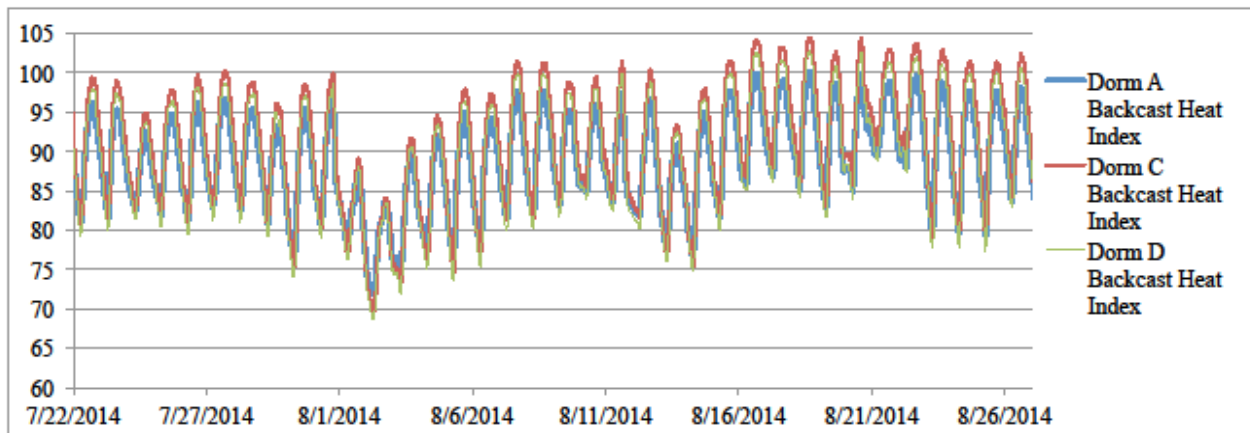
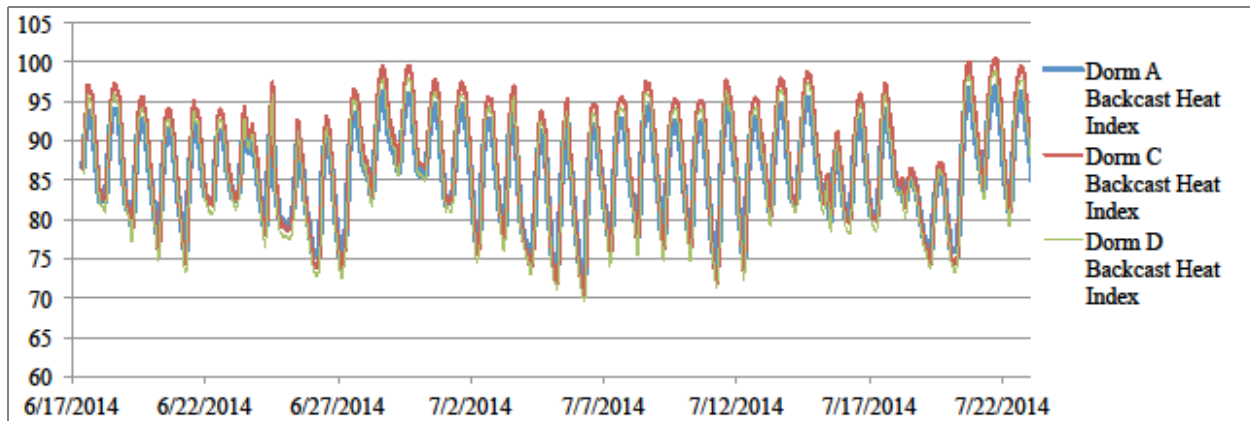
In 2016, the heat index at the Pack Unit reached over 100 degrees on 13 days, and was between 90 degrees and 99 degrees for 55 days. In 2015, the Pack Unit experienced 11 days on which the heat index reached over 100 degrees, and 71 days of heat indices between 90 degrees and 99 degrees. In 2014, there were 34 days of heat indices over 100 degrees, and 47 days of heat indices between 90 degrees and 99 degrees. In 2013, the number of days over 100 degrees heat index jumped to 73, with a corresponding decrease to 16 in the number of days between 90 degrees and 99 degrees. In 2012, a summer in which two individuals incarcerated at other TDCJ facilities died of heat-related illness, the number of days featuring heat indexes over 100 degrees decreased to 45. In 2011, the year that a heat wave hit Texas that led to the deaths of 10 individuals confined in TDCJ facilities, the Pack Unit experienced 74 days over 100 degrees, just one more than the number experienced in 2013.

¹¹ The data is taken from Pls.' Ex. 6.

The heat index was regularly measured inside the dormitories until the present lawsuit was filed. Hearing Tr. 4 at 108. At that point, Warden Herrera ordered his staff to stop measuring the temperature and humidity. *Id.* Thus, the Court does not have as much information about the conditions inside the dormitories as it does about the conditions outdoors. However, the parties have stipulated that the readings taken for Professor Thomas Sager's report, commissioned by Plaintiffs, accurately depict the heat index for the dormitories that were measured from August 27, 2014 through October 8, 2014. Docket Entry No. 693 at 1. These readings are summarized in the chart below:



Professor Sager used the readings above to determine, within a reasonable degree of statistical certainty, the heat index inside three Pack Unit dormitories for the period of June 17, 2014 through August 26, 2017, a time period when no measurements were recorded. *Id.* Prof. Sager used regression analysis, which is a reliable method of statistical analysis, to come to his conclusions. These heat indices are represented in the following charts:



Prof. Sager's results reveal that the heat indices inside Dormitory A of the Pack Unit were over 100 degrees for approximately 13 days from June 17, 2014 through October 6, 2014. In Dormitory C, that number increased to 41 days. Indeed, Dormitory C experienced eight days where the heat index reached over 105 degrees. Six of those days occurred in the span of a single week—in other words, there were three days above 105 degrees, one day below 105 degrees, and then three more above 105 degrees.¹² During these seven days, the heat indices never fell below

¹² Although the charts are a helpful visual, they sometimes obfuscate the exact heat index. However, Prof. Sager provided hourly heat indices as part of his report. (Docket Entry No. 340-18 at 132-168.) Thus, on the seven days mentioned above, the heat index in Dormitory C reached 106.5 degrees (8/16/14), 105.05 degrees (8/17/14), 106.6 degrees (8/18/14), 104.1 degrees (8/19/14), 106.1 degrees (8/20/14), 105.1 degrees (8/21/14), and 106 degrees (8/22/14). (*Id.* at 162-165.)

80 degrees.¹³ Docket Entry No. 340-18 at 128. Dormitory D experienced 40 days over 100 degrees.

In sum, TDCJ's recordings of the outdoor heat index in 2014 demonstrate a total of 34 days over 100 degrees. Dormitories C and D experienced 41 and 40 days over 100 degrees, respectively. Accordingly, the Court finds that the conditions in Dormitories C and D are hotter than the conditions outdoors. Of the three dormitories that were measured, only Dormitory A is cooler than conditions outdoors. This conforms with, and bolsters, the testimony of several Plaintiffs, who testified that the dormitories often feel hotter than outside.¹⁴

D. The Effects of Heat on the Human Body

The Court has heard testimony from several experts about the effects of heat on the human body. There is little disagreement among the experts about the effects; indeed, this is a well-studied area of health science and medicine. The process by which the human body maintains its temperature within a safe physiologic range¹⁵ is called thermoregulation. Docket Entry No. 340-18 at 5. Exposure to heat places pressure on the human body. Hearing Tr. 7 at 8. In response, the body uses two primary mechanisms to cool itself—evaporative cooling (also known as perspiration or sweating) and cutaneous vasodilation (dilation of blood vessels close to the skin). Docket Entry No. 340-18 at 6. These processes are intricately interconnected, and are managed by the section of the brain called the hypothalamus. Docket Entry Nos. 465 at 52; 340-

¹³ This meets the definition of a heat warning, which is issued when the temperature index is higher than 105 degrees for two consecutive days and does not drop below 75 degrees at night. Hearing Tr. 5 at 187.

¹⁴ Richard King testified that “some days it’s cooler outside because there is a breeze blowing.” Hearing Tr. 1 at 29. Similarly, Jackie Brannum testified that “outside you get a little breeze. And inside the building you don’t get any. It’s extremely hot in the summertime.” *Id.* at 80.

¹⁵ The body’s safe physiologic range is typically a set point of 98.6 degrees plus or minus 0.8 degrees. Docket Entry No. 340-18 at 5.

18. Both of these processes release heat from the body into the atmosphere, and are critical to effective thermoregulation. Docket Entry No. 340-18 at 6. As the external environment gets hotter and more humid, the body must work harder to cool itself by increasing perspiration and vasodilation. *Id.* Perspiration requires sweat gland function, which in turn requires neurotransmission—the proper functioning of the hypothalamus. *Id.* Vasodilation also requires neurotransmission, as well as adequate cardiac output. Cardiac output is important because, when the body needs to emit heat, the heart must pump faster and harder to get sufficient blood to the skin, in order to release heat from the blood through the blood vessels at the surface of the skin. *Id.*

Heat illness occurs when the heat created by the environment overwhelms the body's ability to dissipate heat into the environment. Hearing Tr. 3 at 52-53. With regard to vasodilation, the heart can pump only so hard and fast before the body's need to maintain blood pressure results in a limitation in vasodilation. This limitation causes the body to begin to accumulate heat. Docket Entry No. 340-18 at 6. Body temperature can also rise as a result of dehydration from excessive perspiration. The act of sweating depletes the body of water and salt, and without adequate replenishment, a person becomes dehydrated. *Id.* Dehydration causes dizziness, a lack of energy, low blood pressure, weakness, and an increased heart rate. *Id.* A person who is dehydrated and salt-depleted may be unable to increase cardiac output to the degree necessary to dissipate heat, because the heart does not have enough fluids to squeeze on in order to meet the required cardiac output. *Id.*; Docket Entry No. 465 at 67-68. Furthermore, at a certain level of dehydration, the body will stop sweating in order to maintain its fluid levels. Hearing Tr. 7 at 16.

The environment also has an effect on the body's ability to dissipate heat. Dr. Rieger, Defendants' expert, credibly testified that one of the most important ways that the body manages heat loss is through perspiration. *Id.* at 12. However, the amount of perspiration that the air can absorb from the human body is governed by how much humidity is already in the air. *Id.* At 100 percent humidity, the air can no longer absorb water, and the body will be unable to cool itself through perspiration. *Id.* Thus, Dr. Rieger explained, the higher the humidity, the less efficient perspiration is, and the less efficient perspiration is, the less heat dissipation can take place. *Id.* The Pack Unit is located in a humid geographic region, and the housing areas in the Pack Unit are likewise extremely humid. Professor Sager's measurements from August 27, 2014, to October 6, 2014, show that humidity levels in the housing areas were consistently above 80 percent, and often over 90 percent. Docket Entry No. 340-18 at 123-124. The Court finds that the high humidity levels in the housing areas of the Pack Unit impede the inmates' ability to cool their bodies through evaporative cooling.

Heat stress—conditions that cause the body's thermoregulatory systems to fully engage—can cause four major types of heat illnesses. These are heat syncope (fainting), heat cramps, heat exhaustion, and heat stroke. Docket Entry No. 340-18 at 7. Heat syncope is a brief loss of consciousness that results from the increased demand on the heart to pump blood to the skin. *Id.* The heart becomes so taxed trying to pump enough blood to the skin to cool the body, generate adequate blood pressure, and provide blood to the brain to maintain consciousness, that a sudden, brief loss of consciousness may occur. *Id.* Heat cramps are painful muscle cramps that result from dehydration and sodium depletion, most often as a result of exercising or working in a high-heat-index environment. *Id.*

When heat stress begins to overwhelm the body's ability to cool itself, heat exhaustion can occur. *Id.* Although the thermoregulatory systems are fully engaged, the body still cannot maintain a normal body temperature, and the body's temperature may begin to elevate. *Id.* A person with heat exhaustion may experience chills, a headache, and/or muscle cramps, and may feel light-headed, thirsty, nauseated, weak, faint, and/or dizzy. *Id.* at 8. Heat exhaustion may or may not be accompanied by a rise in core body temperature. Hearing Tr. 7 at 10; Docket Entry No. 465 at 54. If a person experiencing heat exhaustion does not get out of the heat, heat exhaustion can lead to heat stroke. Docket Entry No. 340-18 at 8.

Dr. Rieger testified that heat cramps and heat exhaustion are not serious injuries, and Dr. Rieger does not classify heat syncope as a major heat illness. Hearing Tr. 7 at 8-10. Dr. Vassallo opines, however, that there is overlap in all of the above-described heat-related illnesses, and that this overlap should cause concern about all heat-related illnesses. Docket Entry No. 340-18 at 8. For example, heat exhaustion may include heat cramps and heat syncope. *Id.* As a result, Dr. Vassallo concludes that individuals experiencing any of the above heat-related illnesses should be removed from a hot environment. *Id.* The Court finds and concludes that heat syncope is a type of heat-related illness, and that heat syncope and heat cramps, while not fatal, should be taken seriously in the correctional context because they could, in fact, be symptoms of heat exhaustion. Heat exhaustion, in turn, can lead to heat stroke, which is a severe and potentially fatal condition. *Id.*

Heat stroke is defined as an elevation of body temperature above 105.5 degrees, accompanied by alteration of mental status. *Id.* The altered mental status could be subtle, such as inappropriate behavior or impaired judgment, or it could be more obvious, including confusion, delirium, stupor, coma, or convulsions. *Id.* The altered mental status is a symptom of brain

functioning beginning to fail because of the rise in core body temperature. Hearing Tr. 7 at 11. Once brain functioning fails, the body can no longer thermoregulate, because thermoregulation requires proper brain functioning. *Id.* The failure to thermoregulate causes the body's temperature to rise, causing inflammation, injury to body tissues, and cell death, ultimately leading to multiple organ system failure and death. Docket Entry No. 340-18 at 8.

There are two types of heat stroke: exertional and classical. *Id.* Exertional heat stroke occurs when a person is exercising or engaged in strenuous activity in a hot and humid environment. *Id.* Classical heat stroke commonly occurs during heat waves, and victims typically include persons least able to tolerate or escape from heat. *Id.* Heat stroke is a medical emergency that must be treated immediately. Hearing Tr. 7 at 11. If not treated, it may result in permanent brain damage or death. *Id.* Studies have shown that heat stroke leads to death in 30 to 80 percent of cases. Docket Entry No. 340-18 at 9. Those who survive may have a permanent inability to walk and/or talk. Permanent neurological damage occurs in up to 17 percent of survivors. *Id.*

Symptoms of less serious heat-related disorders may portend heat stroke. *Id.* at 8. However, Dr. Vassallo credibly reports that these symptoms do not always occur: often, the body develops heat stroke rapidly, and with little warning. *Id.* at 7. Once heat stress overwhelms the body's ability to cool itself, the body's temperature can rise very rapidly, sometimes leading to life-threatening manifestations of heat stroke, such as a seizure, within 10 or 20 minutes. *Id.* Furthermore, two-thirds of heat stroke victims experience symptoms for less than one day before becoming hospitalized or being found dead. *Id.* The rapid onset of heat stroke means that even frequent observations of persons at high risk of heat stroke are unlikely to give adequate warning of impending heat stroke. *Id.* A person who begins to suffer from heat stroke may be unable to remove himself from heat or call for help because of altered mental status. *Id.* at 8.

Heat stroke is widely recognized to be vastly underreported. Docket Entry Nos. 460 at 91; 340-18 at 41. Heat-related deaths sometimes go unrecognized when medical personnel fail to consider the conditions in which the individual died, and the possibility that the death was heat-related. Docket Entry No. 340-18 at 41. Furthermore, a medical examiner or doctor may not conclude that the cause of death was heat stroke if the body's temperature is not above 105 degrees, which is the medical threshold for heat stroke. Docket Entry No. 460 at 90-91. But the deceased are often not found in time to measure accurate core body temperature before the body begins to cool. *Id.* Finally, because heat-related illnesses can cause various symptoms and exacerbate a wide range of existing medical conditions, the etiology of the death can be difficult to establish. Docket Entry No. 340-18 at 41.

Compelling evidence convinces the Court that heat-related illnesses short of heat stroke are also underreported. Dr. Vassallo stated that hospitalizations and emergency room visits are categorized by the primary diagnosis, without reference to underlying factors that contributed to that diagnosis. *Id.* at 42. Thus, the role of heat in exacerbating an underlying condition is rarely acknowledged or reported. Furthermore, heat cramps and heat exhaustion are not reported in the medical community, so there is no way to determine the rates of heat exhaustion and heat cramps that occur in the free world. Hearing Tr. 7 at 47. Even if heat cramps and heat exhaustion were reported, not everyone experiencing those illnesses will go to the doctor or the hospital—many will treat the condition themselves. Finally, Dr. Vassallo testified that, while the heat-related illnesses described above may occur from short-term exposure to heat, long-term exposure to heat is generally bad for one's health, and increases the risk of mortality from other conditions.¹⁶

¹⁶ The Court finds that Dr. Vassallo's expert report and testimony regarding the effects of heat on the human body were extremely thorough, and that she has extensive knowledge on this subject.

Docket Entry No. 465 at 86-87. The intersection of heat and other medical conditions is explored further below.

1. The Effects of Heat on an Individual with Comorbidities

Individuals with certain conditions are at higher risk for heat-related illnesses, as those conditions impede thermoregulatory functioning. Conversely, heat stress often exacerbates the underlying condition, which can lead to permanent injury and/or death. Dr. Vassallo contends that “many more people die each year from heat-induced exacerbations of underlying medical vulnerabilities than die from heat stroke.” Docket Entry No. 340-18 at 10. The diseases or conditions that are widely believed to increase the risk of heat illness are described below, in no particular order. The majority of these conditions are already recognized in CMHCC’s list of “Common Comorbidities That May Affect Heat Tolerance.” Defs.’ Ex. 4 at 10. The document indicates that the list is not all-inclusive, and notably absent from the list is obesity, which both Plaintiffs’ and Defendants’ experts averred should be included on the list. Docket Entry No. 465 at 62; Hearing Tr. 7 at 73-74.

a. Diabetes

Diabetes causes microcirculatory changes that result in blood vessels that are unable to dilate adequately (a condition known as arteriosclerosis). Hearing Tr. 7 at 18-19; Docket Entry No. 340-18 at 14. This impairs the body’s ability to circulate blood to the brain and heart, disrupting the vasodilatory response to heat. Docket Entry No. 340-18 at 14. Diabetes may also impair kidney function, and the kidneys’ ability to maintain salt-water balance is an important part of the body’s response to heat. *Id.*

b. Obesity

Obesity causes an increased risk of heat-related illness because excess fat beneath the skin can impair the skin's ability to dissipate heat. Docket Entry No. 465 at 117. The connection between obesity and heat-related illness has been demonstrated in scientific studies, and Defendants' expert does not deny the association. *Id.*; Hearing Tr. 7 at 74. The Court thus finds and concludes that obesity is a common comorbidity that affects heat tolerance, despite its absence from CMHCC's list.

c. Cardiovascular Disease

Cardiovascular disease, which includes chronic hypertension and arteriosclerosis, causes a decrease in a person's "cardiac reserve"—the ability to increase cardiac output. Hearing Tr. 7 at 18; Docket Entry No. 340-18 at 14. This means that the heart of an individual with cardiovascular disease cannot pump as hard or as fast as necessary to dissipate heat through vasodilation, impacting the individual's ability to thermoregulate. Hearing Tr. 7 at 18. The stress that is placed on the heart from having to pump harder and faster than normal can also cause damage to the heart, and in some cases can cause the heart to fail. *Id.*

d. Psychiatric Conditions

Individuals suffering from psychiatric diseases are at an increased risk of heat-related illnesses because they may have impaired behavioral responses to heat stress. Docket Entry No. 340-18 at 15. They may not have the ability to reason or to help themselves during a period of heat stress, because their illness may adversely affect their mood, thinking, or behavior. *Id.* More specifically, individuals suffering from depression or anxiety may be unable to communicate well with others, or may experience apathy in the face of challenging circumstances, such as heat stress. *Id.* In sum, individuals with psychiatric conditions may not be able to take advantage of

mitigating measures, recognize the symptoms of heat-related illness when they occur, or ask for help when needed. *Id.*

e. Advanced Age

Individuals who are over the age of 65 are at increased risk for heat-related illness for several reasons. Docket Entry No. 465 at 89. One reason is that, as a person ages, his cardiovascular reserve decreases, limiting the ability of the heart to pump as hard and fast as required by heat stress. *Id.* A person's ability to sense temperature will also decrease with age. *Id.* Furthermore, sweat gland functioning decreases, impeding the body's ability to cool itself through perspiration. *Id.* Thus, both of the major physiological systems responsible for thermoregulating are negatively impacted by advanced age. *Id.* at 90.

f. Pulmonary Disease

People with pulmonary disease, such as Chronic Obstructive Pulmonary Disease ("COPD"), have diseased lungs that cause problems with oxygenation and ventilation. Docket Entry No. 340-18 at 14. COPD is an umbrella term for various lung diseases, including emphysema and asthma. People with COPD have a limited ability to oxygenate the body, and any stressor to the lungs, such as heat and humidity, will worsen their underlying condition. *Id.* Furthermore, pollutants are worse in hot weather, and pollutants exacerbate asthma. *Id.* These conditions also make people more susceptible to illnesses precipitated by excessive heat. *Id.*

g. Sweat Gland Dysfunction

Although sweat gland dysfunction was not discussed by Plaintiffs' expert or Defendants' expert, it is on CMHCC's list of common comorbidities that affect heat tolerance. It is clear to the Court, based on other testimony, that if a person's sweat glands do not function properly, the

body's ability to cool itself through perspiration will be impeded, leading to an increased risk of heat-related illness.

h. Cirrhosis of the Liver, Cystic Fibrosis, & Thyroid Dysfunction

Despite their presence on CMHCC's list of common comorbidities, neither party's expert discussed the physiological reasons why cirrhosis of the liver, cystic fibrosis, and thyroid dysfunction lead to an increased risk of heat-related illness. However, both experts testified that these conditions create an increased risk, and the Court has no grounds on which to question this assertion.

2. The Effects of Heat on an Individual Taking Certain Medications

In addition to underlying conditions that exacerbate the effect of heat on the body, certain medications can impede the body's ability to thermoregulate, thereby increasing the likelihood of heat-related illness. This can occur in a variety of ways, usually by impacting the two major heat regulation systems—perspiration and vasodilation—or by affecting the body's "thermostat"—the hypothalamus. There is very little dispute among the parties about the effects of certain medications on the body's ability to thermoregulate. Indeed, the categories of drugs described below come from CMHCC's own list of "Drugs Associated with Heat Stress." Defs.' Ex. 4 at 7.

a. Anticonvulsants

Anticonvulsants increase the likelihood of heat illness by affecting the neurotransmitters that allow the hypothalamus to function. Docket Entry No. 465 at 63-64. The hypothalamus is then impeded in its ability to monitor and regulate body temperature through perspiration and vasodilation. *Id.*

b. Anticholinergics & Antihistamines

Anticholinergics and antihistamines are used to treat a variety of conditions, including respiratory disorders. They work by blocking acetylcholine, which is the neurotransmitter that drives sweat glands. *Id.* at 64-65. Thus, anticholinergics and antihistamines increase the likelihood of heat illness by interfering with the body's ability to sweat. Anticholinergics and antihistamines also impact the hypothalamus, though those effects are less understood. *Id.* at 66.

c. Antipsychotics

Antipsychotics block acetylcholine, similar to anticholinergics and antihistamines. Thus, antipsychotics inhibit the body's ability to sweat. *Id.* at 65. Antipsychotics also affect dopamine, which is one of the major neurotransmitters involved with the hypothalamus. *Id.* Like anticonvulsants, antipsychotics impede the hypothalamus's ability to monitor and regulate body temperature. *Id.* Finally, antipsychotics can affect the body's ability to vasodilate properly. *Id.* Thus, antipsychotics negatively impact the bodily systems used to regulate temperature, as well as the part of the brain responsible for those systems. All antipsychotics come with a specific warning from the manufacturers to avoid heat and dehydration, as noted in CMHCC's heat policy. Defs.' Ex. 4 at 7. Additionally, CMHCC's policy states that "offenders on antipsychotic drugs should not be allowed to work or recreate in environments where the apparent air temperature is 95 degrees or higher." *Id.*

d. Antidepressants

The antidepressants listed in CMHCC's heat policy are all cyclic antidepressants, which means they are strongly anticholinergic, and therefore impede the body's ability to perspire. Docket Entry No. 465 at 66. They also impact the hypothalamus. *Id.*

e. Antimanics

According to Dr. Vassallo, lithium, which is the primary drug prescribed to treat mania, does affect the body's ability to thermoregulate, by impacting electrolytes, renal effects, and the kidney system. Docket Entry No. 465 at 66. CMHCC states, on the other hand, that lithium does not disrupt the body's ability to thermoregulate. Defs.' Ex. 4 at 7. However, lithium is on CMHCC's list of drugs associated with heat stress because, "if an offender treated with lithium becomes dehydrated, they are at an increased risk of lithium toxicity." *Id.* Because both parties recognize that individuals taking lithium are at an increased risk from heat stress, the Court finds that it does not need to resolve the issue of whether lithium affects the body's ability to thermoregulate.

f. Beta Blockers & Calcium Channel Blockers

Beta blockers and calcium channel blockers are used to treat cardiovascular disease. Docket Entry No. 340-18 at 15. They work by impairing the heart's ability to squeeze, and reducing the speed at which the heart beats, thereby lowering cardiac output. *Id.* However, this also means that the heart cannot pump as fast or as hard as it would need to in order to dissipate heat through vasodilation. Docket Entry No. 465 at 67.

g. Diuretics

Diuretics—also known as "water pills"—cause a loss of fluid from the body, and can be dehydrating. *Id.*

3. The Effects of Heat on an Individual with Multiple Comorbidities and/or Who Takes Certain Medications

Dr. McGeehin credibly testified that an individual with any one of the above-described medical conditions, or taking any of the above medications, will be at an increased risk for heat-related illness. Docket Entry No. 460 at 62. This risk is further heightened, Dr. McGeehin stated,

when an individual has some combination of the conditions and/or medications, particularly those individuals over the age of 65. *Id.* Indeed, CMHCC's own policy states that offenders who take medications on the "Drugs Associated with Heat Stress" list should not be allowed to work or recreate in environments where the apparent air temperature is 95 degrees or higher if they are on more than one such medication, or if they also have an underlying medical condition that places them at increased risk.¹⁷ Defs.' Ex. 4 at 7.

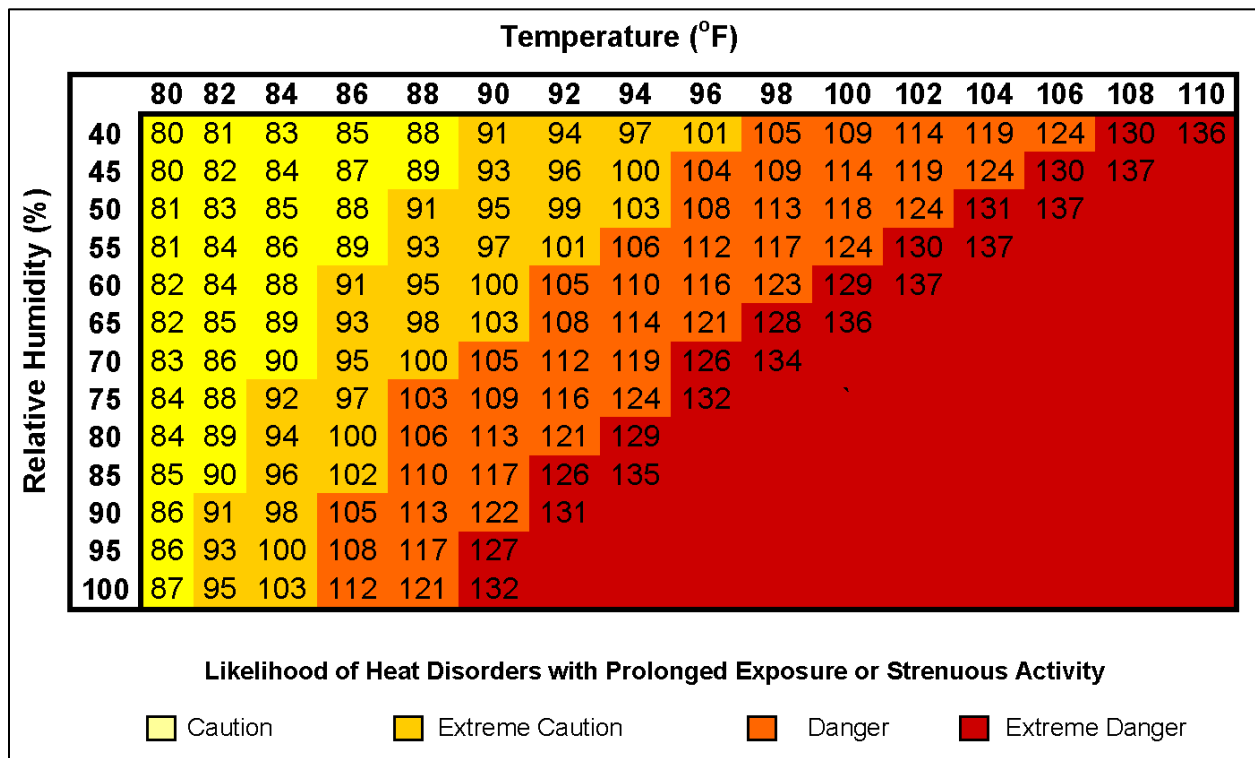
All but one of the Plaintiffs who testified meet these criteria. Richard King is over the age of 65 and suffers from high blood pressure, diabetes, and obesity. He is also on two medications associated with heat stress. Hearing Tr. 1 at 13-14. Jackie Brannum suffers from high blood pressure, diabetes, obesity, and schizoaffective disorder. *Id.* at 73-75. He currently takes eight medications that exacerbate heat stress. *Id.* Thomas Pennington suffers from high blood pressure, diabetes, and obesity, and takes two medications associated with heat stress. *Id.* at 128-129. Carlos Huerta suffers from high blood pressure, is obese, and takes one medication associated with heat stress. *Id.* at 163. Keith Cole suffers from chronic cardiovascular disease, high blood pressure, high cholesterol and diabetes. *Id.* at 200. He takes three medications that are associated with heat stress. Pls.' Ex. 22.

The Court finds and concludes that heat stress can lead to heat-related illnesses even in young and healthy individuals. However, this risk is heightened when an individual is over the age of 65, has a condition that impedes the body's ability to thermoregulate, or takes a medication that impedes the body's ability to thermoregulate. This risk is further heightened when these conditions and medications are combined in any way.

¹⁷ The policy also mandates that individuals on antipsychotics be given a heat restriction. Defs.' Ex. 4 at 7. The Court notes, and discusses in more detail in Section I.G.1.c, that heat restrictions in TDCJ apply to work assignments, but have no impact on the placement of an inmate in one of the 32,000 air conditioned beds that exists in TDCJ. Hearing Tr. 5 at 85.

4. The Heat Index Threshold for Heat Illness

As temperatures and humidity rise, the risk of heat-related illnesses rises. Dr. Vassallo credibly testified that, based on her several decades of clinical experience and a thorough review of the existing literature, temperatures above a heat index of 88 degrees significantly increase the risk of heat-related illness. Docket Entry No. 465 at 70, 77. While prolonged exposure to a heat index above 88 degrees increases the risk of heat-related illness for even young and healthy individuals, those with heat sensitivities may suffer heat-related illnesses within a few hours. *Id.* at 71. As the heat index increases into the 90s and 100s, that risk becomes more pronounced. This is illustrated by the National Weather Service’s Heat Index Chart:



Pls.’ Ex. 11. The National Weather Service (“NWS”) is a division of the National Oceanic and Atmospheric Administration, and the above chart is widely accepted within the field of climatology. Docket Entry No. 465 at 73. Indeed, TDCJ uses the chart in Administrative Directive 10.64, and CMHCC uses a version of this chart in its heat policy. Defs.’ Exs. 1 at 14; 4

at 5. The chart demonstrates that, while a heat index of 88 degrees falls at the high end of the “caution” section, as temperatures and humidity increase, the level of danger also rises.

Dr. Vassallo testified that her clinical experience and the chart above informed her choice of 88 degrees as the heat index threshold, and that her review of the scientific literature subsequently confirmed this number. Docket Entry No. 465 at 75-76. For example, one study she reviewed found that mortality increased in cities in North America, Europe, and South America when temperature and humidity climbed above the 88 degree heat index. *Id.* at 77. Another study showed an increase not only in mortality, but also in emergency department visits and hospitalizations, above a heat index of 89 degrees. *Id.* at 81-83. Dr. Vassallo did not testify, and the Court does not hold, that any risk of heat-related illness disappears below the 88-degree threshold, or that the risk of heat-related illness skyrockets at the 89-degree mark. The NWS chart is designed to demonstrate a gradually increasing level of risk, which is appropriate for the scientific understanding of how heat stress affects the human body. But for purposes of litigation, the Court has no basis upon which to question Dr. Vassallo’s choice of 88 degrees as a threshold above which the risk of heat-related illness increases, and the Court finds that this choice is sound. Specifically with regard to Plaintiffs in this case, Dr. Vassallo concluded that all of the inmates at the Pack Unit, “including young and healthy men with no known medical problems, are at substantial risk for serious heat-related disorders during periods of persistent exposure to a heat index above 88 degrees.” Docket Entry No. 340-18 at 11. The Court agrees.¹⁸

¹⁸ Defendants do not appear to dispute this finding. They presented no evidence at the 2017 hearing alleging that inmates are not placed at a risk of harm by the temperatures and humidity at the Pack Unit. Although Dr. Kathryn Means, who testified at the 2016 hearing, took issue with Dr. Vassallo’s application of epidemiological studies to the population at the Pack Unit, the Court found her testimony to be biased and not credible. Docket Entry No. 473 at 10. Instead, Defendants contend that any risk has been effectively mitigated by the measures currently in place at the Pack Unit. Docket Entry 641 at 9 (“The protective measures currently in place at the Pack Unit are effective and ameliorate the risk that inmates might otherwise face in the summer

The Court further finds that the heat indices in the housing units of the Pack Unit, as measured and aggregated by Dr. Sager in 2014, climbed above this 88-degree threshold—often well above—for 100 of the 106 days measured between June 27, 2014 and October 6, 2014. Although the Court’s analysis would be assisted by the provision of more recent heat indices in the Pack Unit housing areas, Warden Herrera ordered his employees to stop taking those measurements when the present lawsuit was filed. Defendants have provided no evidence that the heat indices recorded in 2014 were anomalous, and the Court has no reason to believe that they are not representative of the majority of summers at the Pack Unit.

Indeed, during the hearing on Plaintiffs’ motion for preliminary injunction, a heat advisory was issued for Grimes County, where the Pack Unit is located, indicating that the heat index was expected to rise “near or above 108” degrees that day. Hearing Tr. 6 at 136-137; Defs.’ Ex. 138. These temperatures fall into the “Danger” category of the NWS heat index chart. Hearing Tr. 6 at 137. TDCJ’s “Training Circular” on extreme heat, which is given to inmates and staff, instructs that, when a heat advisory is issued, inmates and staff should, “Take Action! A Heat Advisory is issued within 12 hours of the onset of extremely dangerous heat conditions . . . Take precautions to avoid heat illness. If you do not take precautions, you could become seriously ill or even die.” Pls.’ Ex. 53 at 2; Docket. Entry No. 326 at 25.

There was some question at the hearing as to why Warden Herrera had not received a notice of this heat advisory from the state operations center for TDCJ, the department in charge of monitoring NWS advisories and disseminating them to the appropriate officials. Hearing Tr. 5 at 182. Cody Ginsel, the Rule 30(b)(6) representative for TDCJ, testified that Warden Herrera did not receive the heat advisory because “[the state operations center] receive[s] these pretty much every day during the summer.” *Id.* at 182-183. Thus, TDCJ’s own representative concedes

temperatures without the measures.”).

that heat indices up to or over 108 degrees are such regular occurrences during Texas summers that TDCJ does not disseminate the advisories to the affected regions. Furthermore, while urging inmates to “take action” and “take precautions” in the face of a heat advisory, TDCJ does not alert the affected prison officials, much less the inmates, when these heat advisories are issued. That heat advisories are issued so often in Texas does not mean that the risk is any less, nor does it excuse TDCJ from the obligation to alert affected populations and take the necessary steps to protect inmates. If anything, the routineness of these heat advisories reveals the extremity of the heat in Texas in the summer months, and TDCJ’s knowledge of the risk posed by this heat.

Accordingly, the Court finds and concludes that, during the summer months, the men incarcerated in the Pack Unit face, on a daily basis, temperatures that substantially increase their risk of heat-related illness, aggravate any underlying medical conditions, or both. While this risk is pronounced even for young and healthy individuals, the risk increases significantly for individuals with certain medical conditions, who are on certain medications, and/or who are above the age of 65. The Court must next address the mitigating measures that TDCJ has implemented in the Pack Unit and other facilities, and determine whether those measures reduce this risk of harm to a constitutional level.

E. Conditions in TDCJ Facilities, Including the Pack Unit, Prior to 2013

TDCJ has made some changes to the conditions in the Pack Unit and other facilities over the last few years—after a series of heat-related deaths in 2011 and 2012, and after this and other related lawsuits were filed against TDCJ and its officials. TDCJ’s heat mitigation measures are described in two documents: Administrative Directive 10.64, entitled “Temperature Extremes in the TDCJ Workplace,” and an annual “Heat Precaution” message that is sent via email. Pls.’ Exs. 42, 57. In 2011, the heat precaution message instructed wardens to: provide additional water in

the housing areas, and provide ice water if ice was available; train employees and inmates to make them aware of the signs of and treatment for heat-related illnesses; situate fans, when used, in such a way to draw air through the structure and exhaust it outside; use air blowers to increase ventilation, when appropriate; allow additional showers for inmates when feasible; allow inmates to wear shorts in dayrooms and recreational areas; clean window screens to ensure maximum air flow; allow all inmates to purchase fans; and ensure that inmates who have been indigent for the past six months and cannot afford to buy a fan are issued a fan, on a first-come-first-served basis. Pls.' Ex. 57.

As explained in this Court's opinion in *McCollum v. Livingston*, these measures were inadequate, in large part because they allowed significant discretion on the part of each warden: with regard to how much water to provide; whether to provide ice, and if so, how much; and whether to allow additional showers. *McCollum v. Livingston*, No. 4:14-CV-3253, 2017 WL 608665, at *15 (S.D. Tex. Feb. 3, 2017). Additionally, no respite program existed before 2015. Hearing Tr. 4 at 27.

F. Heat-Related Deaths and Illnesses in TDCJ Facilities

From 1998 to present, at least 23 men incarcerated in TDCJ facilities have died as a result of heat-related illnesses.¹⁹ Pls.' Ex. 18. Although TDCJ makes much of the nationwide heat wave in 2011 which caused the death of 10 men in TDCJ facilities (Hearing Tr. 6 at 148), the other 13 deaths were spread over the course of eight summers: three men died in 1998, two men in 1999, one man in 2000, another in 2001, one in 2003, one in 2004, two in 2007, and two in 2012. Pls.' Exs. 18, 19. Defendants have presented no evidence that Texas experienced abnormally high temperatures during those summers, as it did the summer of 2011. Although no deaths have

¹⁹ Given Drs. McGeehin and Vassallo's testimony about the underreporting of heat-related death, this number may in fact be larger. *See* Section I.D *supra*.

occurred since 2012, this does not necessarily mean that the risk of death has been eliminated. Indeed, three summers passed between 2007 and 2011 without any heat-related deaths, but the 10 deaths in 2011, and the two in 2012, reveal that the risk was still very real.

Since 2011, TDCJ has made an effort to track heat-related illnesses in its facilities. With the caveat that heat-related illnesses are likely vastly underreported, reports collected by TDCJ show that in 2011, 163 incidents of heat-related illness²⁰ were reported in facilities across the state. Pls.' Exs. 16; 21. One hundred and nine of these incidents occurred indoors. *Id.* In 2012, the total number of heat-related illnesses fell to 118, with 56 of those incidents occurring indoors. *Id.* In 2013, 118 total incidents were reported, with 45 occurring indoors; in 2014, 97 total incidents were reported, with 42 occurring indoors; and in 2015, 94 total incidents were reported, with 55 occurring indoors. For the summer of 2016, 108 heat-related illnesses were reported, with 62 occurring indoors.

It is also clear is that correctional officers employed by TDCJ are suffering heat-related illnesses while on duty at the facilities. During this litigation, TDCJ produced records evidencing heat-related illnesses suffered by hundreds of correctional officers. Pls.' Ex. 16 at 160-266.

Despite the significant number of deaths, and the large number of heat-related illnesses suffered by inmates and correctional officers alike, the Court finds that TDCJ has never seriously considered air conditioning the housing areas of its facilities. Hearing Trs. 6 at 160-161, 214-215; 7 at 135.

²⁰ TDCJ defines a heat-related illness as heat cramps, heat exhaustion, or heat stroke. Especially with inmates who have other morbidities, there would appear to be enormous discretion in determining whether illnesses are called “heat related” or something else—e.g., diabetic, psychiatric, or cardiovascular.

G. The Current Conditions in the Pack Unit

Defendants have presented extensive evidence regarding the mitigation measures currently in place, and they assert that these measures are effective at reducing the risk of heat-related illness faced by inmates during the summer months. Docket Entry No. 641 at 9.

1. Heat Mitigation Measures

While there is little debate about the existence of some of TDCJ's mitigation measures, others are keenly contested. What follows is a summary of each of the mitigation measures that TDCJ claims it has implemented, as well as this Court's factual findings regarding its implementation and effectiveness.

Ice Water

There is no dispute that TDCJ now provides ice water in all of the housing areas, 24 hours a day, 7 days a week. Hearing Tr. 1 at 227. Cups are issued to indigent individuals upon arrival at the facility; otherwise, cups are purchased at the commissary. Hearing Trs. 5 at 148; 6 at 129.

The ingestion of cold water is a beneficial method of controlling or reducing body temperature; furthermore, the ingestion of water is essential in a hot environment in order to avoid dehydration, because of the amount of perspiration that occurs. Hearing Tr. 7 at 24; Docket Entry No. 340-18 at 6. Dr. Rieger explained that cold water helps cool down the body through conduction—the transfer of heat between two objects. Hearing Tr. 7 at 21-22. Essentially, conduction occurs when cold water has direct contact with the warm stomach; heat energy transfers until both the stomach and the water are the same temperature. *Id.* at 24. The Court finds that Dr. Rieger's testimony regarding the cooling effects of drinking cold water is valid, and that providing ice water in the housing areas 24 hours a day is a helpful mitigation measure.

However, Dr. Vassallo pointed out that there are potential adverse side-effects to drinking excessive water, such as a condition called hyponatremic, where the body's level of sodium becomes abnormally low. Docket Entry No. 465 at 168. Given the helpful but limited cooling effect of ice water, the levels of heat faced by the men incarcerated at the Pack Unit, and the potential hazards incurred by drinking too much water, the Court finds that ice water alone could never suffice to mitigate the risk of injury.

Cool-Down Showers

Defendants have also instituted "cool-down showers" at the Pack Unit. Hearing Tr. 1 at 204-205. For the dormitories in the main building, the communal shower area, with 72 shower heads, has 12 shower heads set to cold water at all times. Twice a day, all 72 showers are switched to cold water, and all of the men living in the dormitories are allowed to take showers. Hearing Tr. 3 at 31-32; 110-111. Furthermore, Warden Herrera testified that, if any person in the main-building dormitories wants a cool-down shower, "all he needs to do is ask a staff member, and he is going to be directed to the shower area." *Id.* at 31-32; 111. In order to test his staff's compliance with this policy, Warden Herrera has, on an unknown number of occasions, asked an inmate to request a shower, and then followed up to see if permission was granted. On one occasion, the inmate was not allowed to access the showers, and Warden Herrera instructed the correctional officer at that time that inmates must be allowed to go to showers upon request. *Id.* at 111-112. However, there are no documents, flyers, or training programs informing inmates in the main-building dormitories that they can access cold showers at any time. Hearing Tr. 1 at 60-61; 205. Some of the Plaintiffs testified that they were unaware that they could access cool-down showers at any time. *Id.* at 141; 204; 229. Other than Warden Herrera's informal conversations with inmates at the Pack Unit, there has been no effort made to inform inmates about the

beneficial health effects of taking cool showers during the summer months. Hearing Tr. 4 at 198-199.

The wheelchair-accessible dormitories, Dormitories A2 and A4, have one handicapped-accessible shower inside each dormitory. Hearing Tr. 3 at 31-32. These showers have an adjustable handle that allows the inmate to choose between cold or hot water. *Id.* at 32. In the expansion dormitory, one shower is set up to run cold water. *Id.* at 34. Because the shower is in the dormitory, inmates do not need to request permission to access it. *Id.* at 34. However, 56 men live in the expansion dormitory, and must share the single cold-water shower. Hearing Tr. 1 at 30. Mr. Huerta testified that there is sometimes a line to use this shower. *Id.* at 198. In the trusty dormitory, Warden Herrera believes that all of the showers have an adjustable handle, allowing them to run hot or cold. Hearing Tr. 3 at 37.

Dr. Rieger credibly testified that cold showers help to cool the body by transferring heat from the body into the water molecules, also through conduction. Hearing Tr. 7 at 26. Water is an efficient means of removing heat from the body. In fact, immersion in an ice bath is the most generally accepted treatment for heat stroke. *Id.* at 26. However, Dr. Rieger also testified about the possibility of developing hypothermia—a dangerous decrease in the body’s temperature—by taking a cold shower when one is not overheated. *Id.* at 27, 29-30. The Court finds that cool-down showers are an effective means of cooling the body when the body is overheated. However, the Court finds that cool-down showers are a less effective mitigating measure for preventing individuals from becoming overheated in the first place. Indeed, Dr. McGeehin credibly testified that showers reduce the body’s temperature for the short term, but that the beneficial effect is limited by putting the body back into a hot and humid environment. Docket Entry No. 460 at 45-45. This testimony supports and bolsters the testimony of the plaintiffs, who

credibly and consistently testified that the cool-down showers help while they are in the shower and for a brief time afterward, but that within 15-20 minutes they are again sweating profusely and feeling hot. Hearing Tr. 1 at 43; 87; 118; 141.

Fans

Each housing area contains two large ceiling fans and one large floor fan. Defs.' Ex. 27; Hearing Tr. 3 at 36-37. Additionally, each inmate is allowed to buy a personal fan for use in his cubicle. Hearing Trs. 4 at 244; 5 at 121. Each cubicle has a power outlet. Hearing Tr. 8 at 72. If an individual is indigent, he is provided a fan through a loan program. Hearing Trs. 4 at 199; 5 at 121. Just before the hearing on Plaintiffs' motion for injunctive relief, TDCJ installed eight Power Breezer units in some of the Pack Unit housing areas. Hearing Tr. 5 at 170. A Power Breezer is a large oscillating fan that produces a light mist. *Id.* Defendants readily admit that these fans are not designed to cool down the entire housing area; instead, they are supposed to create a slight cooling effect for inmates standing directly in front of them. *Id.*

The Court finds that Defendants have made a genuine effort to ensure that there are adequate fans in the housing areas at the Pack Unit. But there are significant problems with their heavy reliance on fans as a mitigation measure. First, the Center for Disease Control ("CDC") does not recommend the use of fans above a 95 degree heat index, as fans actually increase heat stress by blowing air that is warmer than the body's temperature over the skin's surface. Docket Entry No. 460 at 37-38. Another study found that "the use of fans indoors in rooms without air conditioning should be strongly discouraged . . . when the heat index exceeds . . . 99 degrees Fahrenheit." *Id.* at 38. Indeed, TDCJ's own "Training Circular" about heat, which is distributed to all inmates, instructs, "Do not direct the flow of portable electric fans toward yourself when room temperature is hotter than 90 degrees. The dry blowing air will dehydrate you faster,

endangering your health.” Pls.’ Ex. 53 at 1. The Court also notes that the CDC advises individuals to “not rely on a fan as your primary cooling device” during periods of extreme heat. Defs.’ Ex. 88 at 2. Accordingly, the Court finds that the use of fans is unhelpful, and potentially harmful, when the heat index exceeds 95 degrees, as is regularly the case in the housing areas of the Pack Unit.

As to the Power Breezers, Defendants’ own expert, Mr. Traknyak, testified that, given the high humidity of the climate at the Pack Unit, Power Breezers are not a good idea, as they simply increase the moisture in the air. Hearing Tr. 8 at 70-71. Indeed, Mr. Traknyak had previously opined that evaporative coolers are effective in dry climates, and therefore would not be effective in the Hutchins Unit, which is located outside of Dallas, Texas. *Id.* at 115-116. Dallas has a less humid climate than the Pack Unit, which is significantly closer to the Gulf of Mexico. *Id.* at 116. Thus, in Mr. Traknyak’s opinion, Power Breezers would be even less effective at the Pack Unit than at the Hutchins Unit. *Id.* at 116. Because Power Breezers do not cool the housing areas, but instead increase the humidity in an already-humid environment, the Court finds that these units are not only ineffective, but potentially harmful. Furthermore, because TDCJ placed these units in the Pack Unit one week before the preliminary injunction hearing, without asking their own expert if they would be effective, the Court finds that this was not a serious attempt to mitigate the heat.

Relaxed Dress Code

Men living at the Pack Unit are allowed to wear shorts and t-shirts in the housing areas during the summer months. Hearing Tr. 5 at 167. They are not allowed to go without a shirt. *Id.* When they go to other areas of the unit, they are required to wear long pants. *Id.* Dr. McGeehin testified that the less clothing one wears in warm climates, the more comfortable one will be,

because perspiration is aided by the exposure of skin to moving air. Docket Entry No. 460 at 41. Thus, a person in a hot, humid climate will be more comfortable in shorts and a t-shirt than a suit. *Id.* However, Dr. McGeehin emphasized that this is true only up to a certain temperature, and that there have been no peer-reviewed studies conducted to test the efficacy of wearing shorts as a heat-mitigation measure. *Id.* at 41-42. The Court finds that, while wearing shorts and a t-shirt in extreme heat is certainly more comfortable than having to wear long pants and a long sleeve shirt, and might have a minimal cooling effect, it does not substantially help to cool the body.

Open Windows

All of the housing areas except for the expansion dormitory have windows that can be, and are, opened during the summer months. Hearing Tr. 5 at 151. This allows for a breeze, if there is one, to enter the housing units, and for ventilation to occur. The expansion dormitory has windows that do not open; in order to provide ventilation, the Pack Unit has a ventilation system and a large fan to circulate the air. *Id.* Open windows can have a cooling effect only when there is cool air or a breeze to blow through them. Thus, during the hottest part of the day, windows will have no cooling effect. Plaintiffs testified that the open windows do little to help with the heat in the housing areas, because “when it’s hot it’s hot air [] coming in the window.” Hearing Tr. 1 at 141. Given the extremely hot and humid outdoor temperatures at the Pack Unit that occur on a daily basis during the summer, the Court finds that having windows open during the daytime provides a minimal cooling effect, if any. The Court additionally finds that having the windows open at night would provide a cooling effect if the heat index drops. However, this effect could occur only to the degree that the heat index drops. The Court also notes that this cooling effect would not be felt by those incarcerated in the expansion dormitory, who do not

have access to open windows. Thus, although temperatures have not been taken in the expansion dormitory since the start of this litigation, the Court doubts that the temperature of the expansion dormitory would decrease significantly at night, the way it does in other housing areas. *See* Section I.C *supra*.

Furthermore, although open windows provide some cooling effect at night, Plaintiffs have credibly complained of insects, such as mosquitos and beetles, that consistently enter the housing units through the wire security screen and bite them. Hearing Tr. 1 at 88; 141-142; 222.

Respite Areas

One of the most recent, and most debated, mitigation measures implemented at the Pack Unit is its respite program. Hearing Tr. 4 at 27-28. Both parties agree that respite—the ability to spend time in an air conditioned environment—can be a beneficial mitigation measure. The parties dispute the extent to which respite, in general, can reduce the risk of harm posed by heat, as well as the adequacy of the Pack Unit’s respite program, specifically.

The 2017 “Heat Directive” email sent to all TDCJ officials dictates that, “[d]uring extreme temperatures, offenders must be allowed access to respite areas,” but gives no other guidance or direction. Defs.’ Ex. 7 at 1. Although the Pack Unit does not have air conditioning in the housing areas, like other TDCJ facilities, it contains many air conditioned locations. These locations include the infirmary, the education department, a barbershop located inside the main building, hallways, the officer dining room, and all administrative offices. Pls.’ Ex. 129.

Defendants maintain that inmates can access all of these locations at any time, on request, and that they may stay in the areas for as long as they want. Docket Entry No. 641 at 11 (“Staff have identified 20 different air conditioned areas that may be accessed as respite wherein offenders may remain for an unlimited time in order to cool down. Offenders are granted access

to one of these areas on request, without exception.”). Defendants further claim that “there are few or no restrictions on what an offender may bring to a respite area,” and that inmates are allowed to talk to each other in the respite areas. *Id.*

Despite the seemingly inviting and open nature of the respite program described above, the evidence revealed that very few men have been requesting or using respite: when the hearing started, only 15-20 inmates had ever used respite at the same time. Hearing Tr. 4 at 31. The parties disagreed about why respite areas were being utilized in such low numbers, considering the seriousness of the heat in the housing areas. Mr. Ginsel testified that the reason is because “they choose not to go.” Hearing Tr. 5 at 147. This statement is belied by the overwhelming weight of the evidence.

To start, Warden Herrera testified that inmates at the Pack Unit are not allowed to choose which area they go to for respite, but are instead directed to an area by a correctional officer. Hearing Tr. 4 at 31. Once that area is full, correctional officers will direct inmates to the next location. When the hearing started, only five of the 20 identified locations had been used as respite areas. *Id.* These were: the barbershop, the lower administration hallway, the education department hallway, the infirmary, and the craft shop. *Id.* at 32. The Court will discuss the evidence regarding each of these areas in turn.

The Barbershop: The barbershop is the first place that Warden Herrera uses as a respite area. Hearing Tr. 3 at 92. The barbershop contains two barber chairs and two small benches placed against two walls. Defs.’ Ex. 129. The inmates are not allowed to sit in the barber chairs, and the benches can hold approximately four to five people each. Hearing Trs. 1 at 216; 9 at 18. Warden Herrera estimates that the barbershop can hold about ten people before it is full. Hearing

Tr. 3 at 70. When the barbers are working, there are individuals waiting to get haircuts, meaning fewer people can be accommodated for respite. Hearing Tr. 1 at 26.

Plaintiffs also presented evidence that offenders are often told that they cannot talk in the barbershop. Hearing Tr. 9 at 45-46. The barbershop has a door with a mesh-covered opening that leads into an area used for legal visits, staff trainings, and other meetings. *Id.* at 46; Defs.' Ex. 36 at 1. Captain Marshall testified that, while that area is in use, he or other officials will order the inmates in the barbershop to stop talking. Hearing Tr. 9 at 44-45; 47-48. Additionally, Captain Marshall conceded that, at some point in the summer of 2016, a sign was placed in the barbershop that said "No talking in the barbershop." *Id.* at 48. Although Captain Marshall testified that this sign was on paper and was immediately taken down, Mr. Denton, one of the named plaintiffs, testified that the sign was in fact painted onto the wall. *Id.* 70; 107.

Lower Administration Hallway: Warden Herrera testified that, after the barbershop is full, he sends people to the lower administration hallway. Hearing Tr. 3 at 70. This hallway is close to a central desk that is staffed with correctional officers, so Warden Herrera does not have to use any extra correctional officers in order to monitor the inmates in respite. *Id.* at 76. The end of this hallway leads to the administrative segregation area, which is where men are held in protective custody. *Id.* at 100. When an inmate has to enter or leave the administrative segregation unit, the lower administrative hallway must be cleared, which means individuals who are there for respite must leave and go somewhere else until the transfer has been completed. *Id.* at 101. Warden Herrera estimates that approximately ten individuals can use the hallway as respite. *Id.* at 75. At the time the hearing began, there were no chairs in the lower administration hallway, so inmates were forced to stand if they wanted respite. *Id.* at 76. Over the course of the hearing, ten chairs were placed in the hallway. Hearing Tr. 9 at 19.

Mr. King testified that during one of the times he sought respite, he was sent to the barbershop, but it was too crowded. Hearing Tr. 1 at 27. He was then moved to the lower administration hallway, where he was told to stand, facing the wall.²¹ *Id.* After about ten minutes, he was told to leave while prison officials moved an inmate from administrative segregation. *Id.* Because Mr. King suffered a viral infection that has limited the use of his legs, and suffers from obesity, he has difficulty standing for long periods. *Id.* at 6-7. After about 30 minutes in respite, Mr. King chose to return to his housing area rather than remain standing and moving from one location to another. *Id.* at 27. Mr. Brannum was also told to face the wall and stand while in the lower administration hallway for respite. *Id.* at 86. Mr. Brannum uses a walker, and he was able to stand for only about 20 minutes. *Id.* at 87. Similarly, Mr. Pennington, who uses a cane to walk, has been discouraged by the need to stand in the barbershop and lower administration hallway, as well as the frequent need to move from one respite area to another; he testified that, eventually, he gives up and returns to his housing area. *Id.* at 132-133.

Education Hallway: The third place used for respite is the education hallway—a hallway directly outside of the library, the law library, and five classrooms. Hearing Tr. 9 at 19. The hallway has benches and chairs that can fit about 25 to 30 people, some sitting and some standing. Hearing Tr. 7 at 77; Defs.’ Ex. 126.

Library: Next, Warden Herrera would turn to the library, which he testified could hold 40 people. Hearing Tr. 3 at 78. Depending on the time of day, Warden Herrera may not need to reposition any correctional officers in order to use the library as a respite area, because he

²¹ When asked if there is a policy of making inmates face the wall in the lower administrative hallway, Warden Herrera stated that any time someone is being taken to administrative segregation, inmates are required to face the wall. Hearing Tr. 3 at 102. The Court notes the inconsistency of this statement with Warden Herrera’s earlier statement that anytime someone is being taken in or out of administrative segregation, the entire hallway is cleared. *Id.* at 101.

already has two officers stationed in the library during the day. *Id.* at 78-79. However, Warden Herrera may need to cancel or reschedule library hours in order to do this. *Id.* at 80; 84.

Infirmary: If the library becomes full, Warden Herrera testified that he would use the infirmary as the next respite area. *Id.* at 81. There are two benches in the infirmary that could hold approximately 15 to 20 men. *Id.* at 81. During the day, there are already two officers stationed in the infirmary, so there would be no need to reposition correctional officers. *Id.* at 81. Mr. Denton and Mr. Brannum testified that, when they have gone to the infirmary for respite, they have been told that they were required to submit to a measurement of their core body temperature, which is done by taking a rectal temperature. Hearing Trs. 1 at 87; 9 at 125. Mr. Denton testified that this requirement deterred him from using respite. Hearing Tr. 9 at 125.

All Other Locations: Once the above five areas are full—after approximately 105 inmates have requested respite simultaneously—Warden Herrera would have to start rearranging his correctional officers, and disrupting the normal functioning of the prison, in order to accommodate more people in respite. Pls.’ Ex. 129; Hearing Tr. 3 at 82-83. The next areas that Warden Herrera would use, in order, are: the caged area of the visitation room located in the main building, which is typically used for non-contact visits, where he could fit approximately 25 people, Defs.’ Ex. 130; the visitation room, which could accommodate approximately 40 individuals, *Id.*; the officers’ dining hall, which could fit around 40 people, Defs.’ Ex. 128; the five classrooms in the education wing, which could hold around 150 people total; the law library, which could fit about 40; the sewing room and administration offices in the boiler room and kitchen, which could hold about 30 people total; a small air conditioned room within the craft shop, which could hold approximately 10 people; and the property office, chaplain’s office, and food service manager’s office, which could hold about 5 each. Hearing Tr. 3 at 82-95.

Trusty Camp: In the trusty camp, which houses 314 inmates, there is an air conditioned administration building that could hold approximately 80 individuals, and an education area that could hold between 50 and 60 men. *Id.* at 99. These areas are located outside of the perimeter fence, and as a result would likely never be used for non-trusty inmates. Hearing Tr. 2 at 153.

Evidence was also presented regarding the information that the Pack Unit has conveyed to inmates about the respite program. The primary source of information is a poster that is designed, in Warden Herrera's words, "to make sure that every offender on the unit understands that they can request and go to respite at any given time." Hearing Tr. 3 at 103. This poster is placed on a bulletin board used for posting notices to inmates and correctional officers. *Id.* This poster reads as follows:

NOTICE TO OFFENDERS

Areas are being made available for offenders who are experiencing difficulty due to heat. These areas are located at Education Department, Lower Administration, Officers Dining Hall, Infirmary, Laundry Captain Office, Food Service Captain Office, Lieutenants office, Regular Visitation Room, Barber Shop (officer and offender), Trusty Camp office (Sgt. And Lt.), Trusty Camp visitation, Trusty Camp Food Service office, Agriculture office, Farm Shop office, Kennel office, Unit Maintenance office, Warehouse office, BOQ dayroom. If you are experiencing difficulty due to the heat, please notify a staff member immediately.

Pls.' Ex. 52. The notice appears also in Spanish. *Id.* Although Warden Herrera testified that there is not, in fact, a requirement that inmates feel ill before requesting respite (Hearing Tr. 3 at 105-106), Mr. Vail stated that inmates could interpret the language "offenders who are experiencing difficulty due to heat" as requiring that they feel ill before seeking respite. Hearing Tr. 2 at 148. Warden Herrera agreed that there are much clearer ways to communicate the intended message to inmates. Hearing Tr. 4 at 27. Defendants' own expert, Dr. Rieger, stated that the poster should be rewritten, as it is unclear and difficult to understand. Hearing Tr. 7 at 74. This is especially

important in a correctional facility, he said, where the average reading level of inmates is generally accepted to be around the third grade. *Id.*

Another poster has been placed on the same bulletin board, labeled as a notice to correctional officers. This poster says, “Respite areas are being made available for offenders to prevent the development of heat-related illnesses.” Hearing Tr. 2 at 263-264.

In addition to the posters, TDCJ’s Risk Management Department has created several handouts that are given to inmates. One, a handout that discusses suicide prevention and the Prison Rape Elimination Act, as well as temperature-related illnesses, says nothing about the respite program, or the importance of seeking out air conditioning during the heat. Pls.’ Ex. 54. A four-page “Training Circular” gives information about heat-related illnesses and their prevention. This handout says that inmates should “use air conditioners or spend time in air conditioned locations such as identified respite areas.” Pls.’ Ex. 53 at 1. On the second page, the handout tells inmates to “stay indoors and, if at all possible, stay in an air conditioned place. If your home does not have air conditioning, go to the shopping mall or public library.” *Id.* at 2. On the fourth page, there is a section marked “Respite Areas,” which writes, “During the extreme temperature months, offenders will be allowed access to respite areas. Ensure employees and offenders are trained, and are compliant with heat precaution procedures to include knowledge of respite area locations and offender access.” *Id.* at 4. Although this second handout does more than the poster and the first handout to identify the importance of spending time in respite areas, the information is still vague, and is not specific to the Pack Unit. In addition, the inclusion of information about going to a shopping mall or public library confuses and dilutes the message.

The Court finds, based on the unclear and incomplete communication and training described above, that both inmates and correctional officers are unaware of, or confused about,

the limitations and rules regarding respite. This is confirmed by Plaintiffs' testimony. Mr. Brannum testified that he has been refused access to a respite area by correctional officers. Hearing Tr. 1 at 86. Mr. King does not think he can access respite areas 24 hours a day. *Id.* at 16; 26. He believes that respite closes around 10:00 p.m., and does not know of anyone who went to respite after that time. *Id.* at 16. Mr. Pennington has been told that he cannot take a book to respite. *Id.* at 134. Mr. Huerta testified that he does not think he can stay in respite as long as he wants, because some officers will tell him to leave once they think he has been there long enough. *Id.* at 174. These issues could be easily resolved with effective training of, and communication with, the correctional officers and inmates at the Pack Unit.

Before the hearing began, only 15-20 men in the Pack Unit had ever requested respite at the same time. However, during the first week of the hearing, on the night of Thursday, June 22, 2017, and during the day on Friday, June 23, 2017, a large group of men at Pack Unit requested respite. Hearing Tr. 9 at 27. Captain Marshall testified that on Thursday night, approximately 65 to 70 men requested respite, and Pack Unit staff placed them in the barbershop, the lower administrative hallway, and the officers' dining hall. *Id.* at 27-28; 32. Later, the men were escorted from the officer's dining hall into the education hallway and library. *Id.* at 28. In the library, Captain Marshall stated that most men had chairs, and the rest were "placed strategically" so they could rest their backs against walls and shelves. *Id.* at 28. On Friday, approximately 150 men requested respite, and they were placed in the barbershop, lower administrative hallway, and two classrooms in the education department, because the library was being used for a class at that time. *Id.* at 29; 32. Approximately 80 men were placed into the library and had access to one bathroom; there was a line of men waiting to use this bathroom. *Id.* at 35. Captain Marshall testified that there were "no problems at all" accommodating the influxes

of men. *Id.* at 29. But the Court finds Captain Marshall's testimony less than credible.²²

Plaintiff Michael Denton was one of the men who requested respite on Thursday, June 22, 2017, and he testified about this experience. When he requested respite at around 5:30 p.m., he was sent to the officers' dining hall, where about 45 other men were located. *Id.* at 97. Upon arrival, he and the other men were told by a correctional officer, "If you all want to play, then we can play, too. If you are in here and your house isn't in compliance,²³ we're going to write you a

²² The Court finds that Captain Marshall was impeached during the hearing in a way that damaged his credibility. Captain Marshall testified that inmates are allowed to talk in respite areas, and that he had never ordered inmates to stop talking in a respite area. Hearing Tr. 9 at 42. Plaintiffs then produced a grievance filed against a correctional officer who ordered inmates in the barbershop to stop talking. Hearing Tr. 9 at 42-43. The correctional officer responded, on the grievance form, that Captain Marshall "gave a direct order not to talk to each and every one of them that was sitting in there." Hearing Tr. 9 at 44. When presented with this grievance, Captain Marshall explained that any time legal visits or staff trainings are happening in the room adjacent to the barbershop, inmates are ordered to stop talking. Hearing Tr. 9 at 46. His reason for not testifying about this when directly questioned was that all inmates in the barbershop, whether there for haircuts or respite, were ordered to stop talking, so he was not simply ordering those in respite to stop talking. Hearing Tr. 9 at 46-47. The Court finds this explanation dubious, and finds that Captain Marshall was attempting to cover up or downplay evidence that was unfavorable for Defendants. The Court also finds that Captain Marshall's memory proved unreliable. On direct examination, he testified that 140 to 150 inmates had used respite on Thursday and Friday, June 22 and 23. Hearing Tr. 9 at 27. On cross examination, he said that in fact the number of inmates using respite on Thursday was around 60, and on Friday the number increased to 150. Hearing Tr. 9 at 32. However, he then said that there were 82 men in the library alone on Thursday, which would be impossible if only approximately 60 men requested respite that night. Hearing Tr. 9 at 35. Accordingly, the Court significantly discounts Captain Marshall's testimony.

²³ This refers to a rule that any time an inmate is outside of his designated living area, his cubicle is required to be clean, with personal effects properly stored. Hearing Tr. 9 at 97. Although this rule is always in place, and is regularly enforced, the Court finds that the specific targeting of inmates who request respite could intimidate inmates who are less apt to assert their rights. This is consistent with the testimony of Mr. Cole that "certain offenders [are] more assertive than others and they are not afraid to get up against the system. They will get out like I do. But the vast majority of offenders on my unit, they are afraid." Hearing Tr. 1 at 210. Mr. Vail also testified that Mr. Cole's assertion of his rights is "not the characteristic of a lot of inmates. A lot of inmates will be afraid to access these areas for the fear of running into conflicts with the staff." Hearing Tr. 2 at 225.

case.”²⁴ *Id.* at 97. After being in the officers’ dining room for approximately 20 minutes, the men were moved to the library. *Id.* When they got there, all of the chairs were taken, so Mr. Denton had to either stand or sit on the floor. *Id.* at 98. Mr. Denton counted approximately 55 men in chairs in the library, and approximately 15 men sitting on the floor. *Id.* He stated that the library was crowded, and that when the air conditioning vent stopped blowing cold air, it became very warm. *Id.* at 100. He said that the process of getting everyone into respite on Thursday evening was disorganized, and that the correctional officers seemed frustrated, and vented this frustration at the inmates. *Id.* at 101. The Court finds Mr. Denton’s description of the events of Thursday evening to be more persuasive than Captain Marshall’s. Defendants’ cross-examination of Mr. Denton failed to raise any significant issues with his testimony.²⁵ His memory was clear, he was not evasive, and his testimony appeared unbiased. Even when it hurt Plaintiffs’ case, Mr. Denton was honest—for example, when Defendants’ and Plaintiffs’ counsel followed-up about the correctional officer’s statement that “houses better be in order,” Mr. Denton readily admitted that this rule is always in place and is enforced on a daily basis. *Id.* at 108; 123.

Based on the evidence described above, the Court finds that the events during the first week of the hearing reveal how unprepared the Pack Unit is to deal with any significant number of inmates requesting respite. The number of men who requested respite on Friday is just over ten percent of the number of inmates housed at the Pack Unit, yet Defendants struggled to find places in which to put them. On Thursday, that number was even smaller, but inmates were shuffled from one location to another, and they were crammed into the library, some with no

²⁴ “Writing a case” means taking disciplinary action against an inmate.

²⁵ Defendants attempt to impeach Mr. Denton’s credibility with his criminal conviction under Rule 609 of the Federal Rules of Evidence. Hearing Tr. 9 at 111. The impeachment seems to have been based in large part on the fact that Mr. Denton still claims to be innocent. But the Court finds that Mr. Denton’s conviction does not reduce his credibility with regard to the events of Thursday evening.

place to sit. Officers were frustrated, and were vocal about their frustration. This does not evidence a well-functioning program where, in the words of Warden Herrera, “every offender on the unit understands that they can request and go to respite at any given time.” Hearing Tr. 3 at 103. Plaintiffs may be aware that they can request respite, but they are likely also aware that their request may provoke the ire of correctional officers; that they may have to walk from one respite area to another; that they may have to stand, despite any discomfort or pain; and that they may not be able to talk or read, much less watch television or play games.

Mr. Vail, Plaintiffs’ expert on corrections, credibly testified that, based on his review of the evidence, Defendants’ respite program has not been designed to incentivize its use. Hearing Tr. 2 at 162. He identified several problems with the respite program at the Pack Unit. In general, Mr. Vail is of the opinion that inmates at the Pack Unit are not being encouraged to use the respite areas, and that in fact there are several disincentives in place. *Id.* at 153. First, he testified that there are no dedicated staff members assigned to some of the respite areas that might be able to handle a larger volume of inmates. *Id.* at 146. Instead, inmates are sent to areas like the barbershop and the lower administration hallway, which cannot accommodate many people and are not designed to allow for other activities, such as writing, playing games, or watching television. He identified the inability to sit and talk, and the occasional requirements to stand with one’s nose against the wall or to submit to a rectal temperature, as significant disincentives to using the respite areas. *Id.* at 146-147. He stated that having respite areas in administrator offices is problematic because there is potentially confidential or secure information located in those offices; furthermore, most inmates will not feel comfortable spending time in an administrator’s office, for fear of being labeled an informant. *Id.* at 152-153.

In order for the Pack Unit to have a fully-functioning respite program, Mr. Vail recommends creating a comfortable environment where inmates can sit, talk, relax, and engage in activities, such as reading, watching television, or playing games. *Id.* at 160; 236. He recommends publicizing the program, and clearly communicating where respite is, what hours it is open, and what the rules are once there. *Id.* at 160; 148. He thinks that the poster regarding respite should be more clear, more inviting, and explain why respite is important for one's health. *Id.* at 149. Ideally, there would be a dedicated space for respite; for example, air conditioning a location such as the gym could provide an area large enough to accommodate a higher volume of inmates in respite. *Id.* at 163; 278. Mr. Rieger agrees that, in order to successfully implement a respite program, inmates should be able to sit down, read, talk, and generally be comfortable. Hearing Tr. 7 at 140-141.

Based on the above-described evidence, the Court finds that Plaintiffs are failing to use the respite areas at the Pack Unit, not because they simply choose not to, as Mr. Ginsel proposed, but because the respite program is poorly designed, administered, and communicated. Accessing respite means being forced to stand, or sit in hallways with nothing to do, or sit in a barbershop in silence; officials have not communicated the extent and limits of the respite program to the inmates or correctional officers; and the prison has not educated the inmates about the importance of seeking respite on a daily basis during the summer months. This is not the robust respite plan described by Defendants in their briefing, nor is it the type of program that would constitute an effective mitigating measure.

However, even if a successful respite program were implemented at the Pack Unit—one that incorporated all of the suggestions made by Mr. Vail and Dr. Rieger—the Court finds that

significant evidence supports Plaintiffs' claim that they still would not be free from a substantial risk of serious injury or death.

Dr. Rieger testified that respite is an effective mitigation measure because it removes a person from a hot environment for that period of time, and provides that person with an opportunity to cool down, decreasing their body temperature if it has begun to rise. Hearing Tr. 7 at 56. Dr. Vassallo testified, however, that for the time Plaintiffs are not in respite areas, which would be the majority of the hours of the day, they would be subjected to temperatures that could cause sickness and death. Docket Entry No. 465 at 135. Given the rapidity with which a person can develop heat stroke, several hours in the temperatures at the Pack Unit could result in serious injury. Docket Entry Nos. 465 at 135; 340-18 at 7. This is especially true for individuals with underlying conditions, or on medications, that hasten the onset of heatstroke. Docket Entry No. 465 at 135.

Indeed, the Plaintiffs who testified that they were regularly accessing respite areas stated that they still experienced symptoms of heat-related illness. Mr. Brannum works in the craft shop, and he testified that he accesses the air conditioned portion of the craft shop on a daily basis and is able to cool off in that room. Hearing Tr. 1 at 110. However, Mr. Brannum—who is 63 years old, suffers from high blood pressure, diabetes, obesity, and schizoaffective disorder, and takes eight medications that affect his ability to regulate temperatures—still experiences weakness, headaches, a rapid heartbeat, difficulty breathing, and nausea during the summer months. *Id.* at 78. Mr. King, who is 71 years old, suffers from high blood pressure, diabetes, and obesity, and takes two medications that interfere with thermoregulation, also works in the craft shop, and uses the air conditioned room for respite on a daily basis. *Id.* at 54. But he also continues to feel symptoms of heat-related illness when he is in his housing area, including

difficulty functioning, sluggishness, and a diminished appetite. *Id.* at 17. Mr. Cole, who is 63 years old, suffers from chronic cardiovascular disease, high blood pressure, high cholesterol, and diabetes, and takes three medications that interfere with heat regulation, uses respite on a daily basis. *Id.* at 228. Yet he testified that he also feels the symptoms of heat-related illness every day when he is in the housing units. *Id.* at 219. He feels dizzy, nauseated, and has difficulty breathing; additionally, his underlying conditions, such as his heart problems, are more aggravated in the summer than during the winter months. *Id.* at 219.

The Court finds that respite areas are a useful mitigation measure while an individual is in them, as well as to the degree that they allow that individual's body temperature to normalize before going back into housing areas. However, the respite program at the Pack Unit suffers many deficiencies, described above, that make its use difficult and unpleasant, and that discourage inmates from seeking respite. Even if respite were actively encouraged and made to be more comfortable, it is clear that Warden Herrera could not accommodate large numbers of inmates in respite at any given time without drastically changing the operations of the Pack Unit. Assuming that the Pack Unit could create a respite program that functions as intended, inmates at the Pack Unit are still left vulnerable to heat-related illness from the extreme heat faced while in their housing areas. This risk is especially heightened for individuals with conditions, or on medications, that affect their ability to thermoregulate.

Wellness Checks

Defendants claim that wellness checks of inmates on the heat-restriction list are performed every 30 minutes at the Pack Unit, and that this is an effective mitigation measure. It is somewhat unclear what is meant by "wellness check." TDCJ's 2017 Heat Directive states that, "During normal security checks, officers must conduct wellness checks and seek care for

offenders requesting medical assistance or exhibiting signs of illness.” Defs.’ Ex. 7 at 1. Neither TDCJ nor the Pack Unit has written directions about how to conduct a wellness check. Hearing Tr. 4 at 6. Defendants’ expert, Dr. Rieger, testified that a wellness check simply means human contact. Hearing Tr. 7 at 95. Specifically, it gives “each person in that contact an opportunity to see the other, to look at their state, to ask questions if they want to, not ask questions if they don’t want to.” *Id.* at 95. He emphasized the importance of looking at each inmate and making eye contact with each inmate. *Id.* at 96. Plaintiffs insist that a wellness check should be conducted by medical personnel, and should include specific questions that each inmate is asked. Docket Entry No. 620 at 5; Hearing Tr. 9 at 94.

What is in fact occurring at the Pack Unit appears to be less involved than any of the descriptions above. Warden Herrera testified that wellness checks are essentially security checks, which have been performed in TDCJ facilities since 1980, but stated that “we pay a little bit closer attention to the ones on the [heat-restriction] list.” Hearing Tr. 4 at 6. Thus, in the summer, during the security check that is performed every 30 minutes, officers are expected to pay closer attention to the inmates that are on the heat-restriction list, which each officer receives. Warden Herrera testified that security/wellness checks for an entire dormitory, housing 56 men, take around four or five minutes to complete. *Id.* at 12.

The named Plaintiffs who are on the heat-restriction list all testified that there is nothing different about the security checks that occur in the summer as opposed to those that occur in the winter. Hearing Tr. 1 at 30; 89; 143; 216. Mr. King stated that, if an inmate is awake, correctional officers “just walk on past” without stopping. *Id.* at 30. If an inmate is asleep, the officer will wake him up and ask, “Are you alive?”²⁶ *Id.* at 30; 142; 156; 216-217. The Court

²⁶ Both Defendants’ and Plaintiffs’ experts found this practice troubling. Dr. Rieger testified that he did not see what is added by waking inmates up in the middle of the night, as opposed to

finds that the consistency of Plaintiffs' testimony lends credibility to their assertions; furthermore, their statements are supported by Warden Herrera's testimony that security/wellness checks for 56 inmates take four or five minutes to complete. There are no written materials instructing officers on how to conduct wellness checks, nor are there documents that are filled out during wellness checks to ensure that they were properly done and that each inmate was observed. Hearing Tr. 4 at 26. Mr. Vail credibly testified that wellness checks, as currently performed, do little to prevent heat-related illness. Hearing Tr. 2 at 274. Although Dr. Rieger stated that wellness checks were effective in reducing heat-related illness, the checks that he described are not occurring at the Pack Unit. Hearing Tr. 7 at 95. However, even if wellness checks were conducted in a more thorough manner, Dr. Vassallo opined that the rapid onset of heat stroke means that even frequent observations of persons at high risk of heat stroke are unlikely to give adequate warning of impending heat stroke. Docket Entry No. 340-18 at 8. Thus, the Court finds that the wellness checks implemented at the Pack Unit are an ineffective mitigating measure for heat-sensitive inmates.

Employee and Inmate Training

In the 2017 Heat Directive email, TDCJ states that employees and offenders should be trained to be aware of "the signs and treatment for heat-related illnesses." Defs.' Ex. 7 at 1. TDCJ also states, in the email, that employees and offenders should be trained and compliant with heat precaution procedures, "including knowledge of respite area locations and offender access." *Id.* Finally, all employees are to be given Employee Information Cards, which contain information about symptoms and treatment of heat-related illnesses. *Id.* TDCJ has produced a training video that is shown to employees and inmates on a regular basis. Hearing Tr. 3 at 107.

simply checking to make sure the inmate is breathing. Hearing Tr. 7 at 97. Mr. Vail similarly expressed his opinion that this practice is problematic. Hearing Tr. 2 at 135.

This video shows the symptoms of heat-related illnesses, but says nothing about the availability and importance of respite. Hearing Tr. 4 at 59.

As discussed in detail in the section of this opinion dealing with respite, there appears to be very little communication to inmates about the importance of seeking respite during extreme temperatures. Such information could be useful to inmates, although it would be limited by the capacity and comfort problems with the Pack Unit's respite program, as previously identified.

2. Heat Wave/Extreme Temperature Policy

Defendants' expert, Dr. Rieger, testified that, eventually, Texas will experience another heat wave—the question is not “if,” but “when.” Hearing Tr. 7 at 80. The Court and the parties have no way of knowing when a heat wave will occur, but it is clear that one will come.²⁷ Given the many deaths and heat-related illnesses in TDCJ that resulted from the 2011 heat wave, the import of having detailed and thorough responses in place cannot be overestimated. This is especially true given Dr. Rieger's testimony that, in the event of a heat wave, the current mitigation measures would not suffice to protect the inmates in the Pack Unit. *Id.* at 79-80.

Defendants argue that they already have a heat wave policy, in the form of their “Incident Command System” (“ICS”). Docket Entry No. 641 at 31. ICS is a system used nationwide to respond to emergencies and to communicate within and between agencies. Hearing Tr. 4 at 179. Within TDCJ, ICS is initiated any time there is some type of emergency in a facility, such as a sick inmate, a fight, or an alleged sexual assault, all the way up to a complete evacuation of a unit. *Id.* at 179; Hearing Tr. 5 at 173. For large-scale events, such as a hurricane, the official

²⁷ The Court takes judicial notice that “climate scientists forecast with a high degree of confidence that average temperatures in the U.S. will rise throughout this century and that heat waves will become more frequent, more severe, and more prolonged.” Daniel W. E. Holt, *Heat in U.S. Prisons and Jails: Corrections and the Challenge of Climate Change*, Columbia Law School Sabin Center for Climate Change Law, i (August 2015), https://web.law.columbia.edu/sites/default/files/microsites/climate-change/holt_-_heat_in_us_prisons_and_jails.pdf.

command center is located in Huntsville, Texas, and includes various TDCJ administrators. Hearing Tr. 5 at 173. Mr. Ginsel insists that ICS is a heat wave policy, and testified that, if TDCJ believes there may be a heat wave, the ICS command center will come together “to make the determination are we going to shut down activities on the unit or are we going to evacuate offenders from that unit.” *Id.* at 178. Although the Incident Command System was in place in 2011, Mr. Ginsel testified that it was not initiated with regard to the heat wave that killed ten men in TDCJ facilities. *Id.* at 178. This casts doubt on Mr. Ginsel’s confidence that ICS will be activated, and will provide the necessary procedures, in the event of another heat wave.

Other than Mr. Ginsel, none of the witnesses thought that ICS was a heat wave policy. Warden Herrera testified that there is no heat wave policy for TDCJ or for the Pack Unit. Hearing Tr. 4 at 169. Despite acknowledging that the Pack Unit will experience another heat wave at some point in the future, and that a formal heat wave policy would be helpful in the event of a heat wave, Warden Herrera stated that he will not develop a heat wave policy unless ordered to do so by his supervisors or this Court. *Id.* Dr. Rieger testified that he does not think that ICS is a heat wave policy, and that he would want a written policy dictating how to respond to a heat wave. Hearing Tr. 7 at 74. Mr. Vail testified that TDCJ does not have a heat wave policy, and that, while ICS is a structure with which to respond to different types of emergencies, it contains no protocols specific to a heat wave. Hearing Tr. 2 at 141-142. Mr. Vail used the example of an escape to demonstrate his point: if an inmate escaped, TDCJ would certainly use ICS. However, it would also use its written policy dictating what specific steps to take in response to the escape, such as alerting local law enforcement, setting up roadblocks, and calling in scent-tracking dogs. *Id.* at 142; Hearing Tr. 5 at 202. Mr. Ginsel responded that there is a separate written policy for escapes because “an escape is an escape whether you escape from one

prison or another.” Hearing Tr. 5 at 202. He averred that this cannot be said for a heat emergency. *Id.* at 203.

The Court finds that Mr. Ginsel’s testimony on this matter is not credible. It is clear to the Court and to every other witness, including a Defendant in this case, that ICS is not a heat wave policy. It is also apparent that a heat wave policy would be beneficial when the next heat wave occurs. Finally, the Court finds Mr. Ginsel’s reasoning that TDCJ cannot develop a specific written protocol for heat waves because the response to a heat wave will not be the same in every facility exceedingly unpersuasive, for the following reasons.

First, Mr. Vail and Dr. Rieger listed several protocols that could be implemented at most, or all, facilities, in the event of a heat wave. Mr. Vail testified that, in the event of a heat wave, air conditioners could be rented, more ice water could be provided, or more medical staff could be brought in. Hearing Tr. 2 at 142. Dr. Rieger stated that kitchens could be shut down to reduce heat, cold meals could be served to reduce heat gain from hot meals, recreation could be eliminated, and heat-sensitive inmates could be moved to a facility with air conditioning. Hearing Tr. 7 at 81. Both experts emphasized that these are just suggestions that could be rejected, and that TDCJ is in the best position to brainstorm as to what procedures would be most effective considering its resources and facilities. Hearing Trs. 2 at 142; 7 at 80.

Second, the “Heat Directive” email, which Defendants call a policy, lists steps that should be taken in all TDCJ facilities during the summer. Defs.’ Ex. 7. These steps include things like, “All offenders may purchase a fan if they do not already have one,” and, “Make sure window screens [in housing areas] are clean so air flow is not restricted.” *Id.* at 3. But the Court is aware that certain facilities in TDCJ do not have electrical outlets for personal fans. *McCollum v. Livingston*, 2017 WL 608665, at *3 (S.D. Tex. Feb. 3, 2017). Others have windows that are

sealed shut, such as the expansion dormitory at the Pack Unit. Thus, TDCJ's Heat Directive lists protocol that cannot always be followed, due to the uniqueness of each facility. This did not prevent TDCJ from creating protocols that should be followed to the best of each warden's ability; nor should differences in facilities prevent the development of a heat wave policy.

Finally, if in considering the creation of a heat wave policy, TDCJ honestly concludes that it is impossible to list protocols to be followed at every facility, there is no reason why TDCJ could not order each facility to develop its own heat wave policy. Alternatively, TDCJ could develop a list of suggested protocols, and require that individual facilities create their own policies based on those suggestions. For these reasons, the Court is not persuaded that the difficulties of constructing a heat wave policy justify Defendants' failure to do so. The Court does not doubt that ICS will, and should, be used during the next heat wave. But the risk that heat waves present requires preparation well beyond this system.

3. Heat-Related Illnesses at the Pack Unit

Defendants make much of the fact that only five reported heat-related illnesses occurred in the Pack Unit in 2016, and that as of June 19, 2017, none had been reported in 2017. Hearing Tr. 5 at 38. The Court regards these statistics with skepticism. The Court has found that heat-related illnesses are vastly underreported. *See* Section I.E.2 *supra*. Indeed, Mr. Pennington testified that, earlier this summer, he began to feel dizzy, had difficulty breathing, and felt "funny," like he was going to faint. Hearing Tr. 1 at 138-139. He went to the infirmary to cool down but was not diagnosed with a heat-related illness, although the nurse told him his symptoms were a result of the heat. *Id.* All of the Plaintiffs described experiencing symptoms similar to those of Mr. Pennington on a regular basis, but these symptoms are very rarely reported or diagnosed as a heat-related illness.

Furthermore, the Court finds that Ms. McWhorter, who collects the incidents of heat-reported illness across TDCJ, may have underrepresented the number of reported illnesses. For example, Ms. McWhorter's documents indicate that six heat-related illnesses occurred at the Pack Unit in 2012. Hearing Tr. 5 at 82. Yet documents produced by TDCJ reveal 12 incidents of heat-related illness at the Pack Unit. *Id.* Ms. McWhorter was unable to provide an explanation for this discrepancy.

Even if the number of heat-related illnesses is as low as Ms. McWhorter testified, it does not support Defendants' argument that the mitigation measures implemented in 2015—respite areas, cool-down showers, and wellness checks—have caused a decrease in the risk of heat-related illness. According to Ms. McWhorter, the number of reported heat-related illnesses in the Pack Unit was five in 2012; two in 2013; three in 2014; three in 2015; and five in 2016. Defs.' Ex. 50. Defendants' own statistics reflect no decrease in reported heat-related illnesses since the implementation of the measures touted by Defendants. Furthermore, the Court finds that these numbers more likely reflect systemic under-reporting of heat-related illnesses in TDCJ, rather than the success of the new mitigating measures. The Court finds that this under-reporting has various causes, such as the medical reasons discussed in section I.E.2, as well as inmates' lack of knowledge regarding the symptoms and seriousness of heat-related illness; inmates' sense of learned helplessness from years of complaints about the heat going unheeded; requirements, such as the measuring of core body temperature with a rectal thermometer, that discourage the reporting of heat-related illness; and the instinct to treat the symptoms of heat-related illness without going to the infirmary.

Finally, the Court finds that high numbers of heat-related illnesses are not a prerequisite for a finding that a substantial risk of serious harm exists. "That the Eighth Amendment protects

against future harm to inmates is not a novel proposition.” *Helling v. McKinney*, 509 U.S. 25, 33 (1993); *see also Ball*, 792 F.3d at 593 (“To prove unconstitutional prison conditions, inmates need not show that death or serious injury has already occurred.”) “It would be odd to deny an injunction to inmates who plainly proved an unsafe, life-threatening condition in their prison on the ground that nothing yet had happened to them.” *Helling*, 509 U.S. at 33. The Court applauds the efforts that TDCJ has made to implement mitigating measures at the Pack Unit and other facilities. But Plaintiffs have shown that heat-related illnesses still occur at the Pack Unit, in spite of these mitigation measures. The record is replete with evidence of unreported heat-related illnesses experienced by Plaintiffs on a regular basis. Expert witnesses have convincingly testified that Plaintiffs face a substantial risk of harm from the current conditions at the Pack Unit. Credible evidence reveals that Defendants have no substantive plan in place in the event of a heat wave, and there is no dispute among the experts that the current mitigating measures would not suffice during a heat wave. Plaintiffs do not need to show high numbers of heat-related illnesses at the Pack Unit to establish that they are still at risk of current and future harm. Accordingly, the Court finds that Plaintiffs face a risk of current and future harm from the conditions at the Pack Unit.

H. Proposed Remedies

Plaintiffs have proposed numerous remedies, should the Court find an ongoing constitutional violation. The primary remedy they seek is for the Court to order the Pack Unit to reduce the temperatures in the housing areas. Should the Court agree, and order Defendants to reduce the temperatures, no other remedies are sought. However, if the Court does not order such relief, Plaintiffs request numerous forms of alternate relief, discussed below.

1. Air Conditioning

Despite a variety of fans and ventilators in the housing units at the Pack Unit, TDCJ has not reduced the heat index in those areas. Thus, the primary relief sought by Plaintiffs is the reduction of the indoor apparent temperatures in the housing areas to below 88 degrees. Although it is possible to cool spaces without the installation of air conditioning units, *see Ball v. LeBlanc*, 223 F.Supp. 3d 529, 537-541 (M.D. La Dec. 22, 2016), *rev'd on other grounds*, the simplest way to do so is to install some sort of air conditioning system.

a. The Effectiveness of Air Conditioning

Dr. McGeehin credibly testified that “heat is one of the few things that we can point to something and say that eliminates the risk.” Docket Entry No. 460 at 155. In the case of heat, that “something” is air conditioning. *Id.* Dr. McGeehin specifically testified that the deaths that occurred in TDCJ facilities as a result of heat-related illness could have been prevented by air conditioning, and that air conditioning would eliminate the risk of injury or death that currently exists in the Pack Unit. *Id.* at 155, 157. In 1995, 90 percent of all homes in southern states were air conditioned, and that number has likely increased in the past 22 years. *Id.* at 156. (This statistic is the most recent one to appear in the record.) The American Society of Heating, Refrigerating and Air-Conditioning Engineers (“ASHRAE”) produces standards by which engineers design structures and air conditioning systems. The ASHRAE 55 comfort standard has been in place since 1981, and dictates that structures should be air conditioned to about 75 degrees. Hearing Tr. 8 at 16. Dr. Vassallo testified that death rates in free society were much higher before air conditioning existed or became standard. Docket Entry No. 465 at 100. Because deaths from heat stroke were not reported, it is impossible to know how many of those deaths were caused by extreme heat. *Id.* But the Court finds convincing Dr. Vassallo’s hypothesis that

significantly more people died of heat stroke before air conditioning existed than do now. Regardless, it is clear that air conditioning effectively reduces the risk of heat-related illness, even in climates with extreme heat, such as Texas.

b. Pre-Existing Air Conditioned Beds Within TDCJ

TDCJ currently has over 150,000 beds in its 109 facilities across the state. Of those beds, 32,434 are air conditioned. Hearing Tr. 6 at 24; Defs.’ Ex. 109 at 3. Twenty-eight facilities have air conditioning in all of the housing areas, 53 facilities have air conditioning in some of the housing areas, and 23 facilities have no air conditioning at all in the housing areas. Defs.’ Ex. 109 at 3. Defendants contend that none of the beds in air conditioned housing would be appropriate for the inmates at the Pack Unit, for a variety of reasons. Of the air conditioned beds throughout TDCJ facilities, 3,745 are segregation cells, and 11,616 are treatment²⁸ beds, leaving 17,073 air conditioned general population beds. *Id.* Mr. Ginsel testified that approximately 3,386 of these general population beds are located in female units. Hearing Tr. 6 at 24-25. State jails, which are designed to house people sentenced to two years or less for a non-aggravated crime, contain 4,274 of the air conditioned beds. *Id.* at 23, 25. Transfer facilities have 2,068 air conditioned beds, and are generally less secure than long-term facilities such as the Pack Unit. *Id.* at 25-27. This means they would be unable to accommodate many of the inmates at the Pack Unit who have long sentences. *Id.* An estimated 234 beds are located in pre-release facilities, which are designed for inmates within three years of release. *Id.* at 27; Defs.’ Ex. 109. About 3,229 beds are used for “safekeeping,” high-security inmates, or “transient” inmates. Hearing Tr. 6 at 33. “Safekeeping” beds are used to house vulnerable populations, such as transgender or gender-nonconforming inmates, or inmates who are small in stature. *Id.* at 28-29; Defs.’ Ex. 109.

²⁸ “Treatment” beds include beds used for offender programs, medical, and mental health. Placement in these beds is generally done at the recommendation of the Board of Pardons and Parole (for programs) and medical staff (for medical and mental health). Defs.’ Ex. 109 at 3.

High-security beds are used for inmates with a “G5” security level, which means they are one step from going to administrative segregation—they are inmates with a history of aggression or possession of weapons in prison. Hearing Tr. 6 at 31. “Transient” inmates are those who are in between locations, for a variety of reasons—pending a move to another facility, or while an investigation into an alleged threat is ongoing. *Id.* at 31-32. In sum, Mr. Ginsel stated that any court order to move inmates from the Pack Unit into pre-existing air conditioned beds would force vulnerable and/or high-security inmates into bunks that are not designed and are not appropriate for them. *Id.* at 38.

Finally, Mr. Ginsel testified that, once all of the above-listed beds were subtracted from the approximately 17,000 non-treatment and non-segregation air conditioned beds, there would be zero beds available for anyone from the Pack Unit. *Id.* at 34-35. The Court notes that, until 2013, TDCJ did not know how many air conditioned beds existed system-wide. *Id.* at 50. The survey on which the above numbers are based was conducted, in part, because of a media inquiry. *Id.* at 50. The Court finds that Mr. Ginsel persuasively testified that all of the air conditioned beds in TDCJ are accounted for and in use by inmates who could not be readily or safely transferred to non-air conditioned beds.

c. Medical Providers’ Inability to Recommend Air Conditioned Housing

Medical providers have the ability to recommend that an inmate be placed in a Type-II or Type-III Geriatric facility, which are required to have air conditioning. Hearing Tr. 5 at 41. However, there are only two such facilities in all of TDCJ, and there are strict criteria for who can be housed in each. *Id.* at 41; Hearing Tr. 6 at 36. The Duncan Unit is the only Type-II Geriatric facility in TDCJ. Hearing Trs. 5 at 41; 6 at 35. It has 566 air conditioned beds. Hearing Tr. 6 at 35. According to TDCJ, a Type-II Geriatric facility is designed for elderly male

offenders and has some capacity for wheelchair-bound offenders. Defs.' Ex. 116 at 3. But, Mr. Ginsel explained that there are also strict security considerations for assignment to the Duncan Unit. Hearing Tr. 6 at 36. The facility was originally a transfer facility, and as such has only one perimeter fence. Most facilities, including the Pack Unit, have two perimeter fences. *Id.* at 25-26, 36. As a result, Mr. Ginsel testified, inmates with long sentences could not be housed at the Duncan Unit. *Id.* at 36. Furthermore, the Duncan Unit does not have psychiatric services, so inmates with mental illness could not be housed there. *Id.* For these reasons, the Duncan Unit is not a viable facility in which to house inmates at the Pack Unit. The only Type-III Geriatric facility in TDCJ is located in the Estelle Unit. *Id.* at 38. It has 264 air conditioned beds, and is designed for individuals who are capable of some self-care but who need constant medical attention. *Id.*; Defs.' Ex. 109 at 1.

Ms. McWhorter, the former manager of TDCJ's Health Services Liaison, testified that, in order for an inmate to be assigned to a geriatric unit, a medical provider would send a request to Health Services Liaison. Hearing Tr. 5 at 41. TDCJ would then determine whether that inmate meets the security criteria for those units, and whether there is space. Hearing Tr. 6 at 36.

Other than the Duncan and Estelle units, medical providers do not have the ability to recommend that an inmate be placed in air conditioned housing area because of his medical condition or medication regimen. Pls.' Ex. 116. Indeed, TDCJ's "Health Services Liaison Facility Types List" states explicitly that Health Services Liaison "*cannot* request reassignment of an offender to an air conditioned or climate-controlled facility." *Id.* (emphasis in original). This is why the "heat-restriction" placed on many of the inmates at the Pack Unit includes a prohibition on working and recreating in environments above 95 degrees, but does not recommend housing in a climate-controlled environment.

d. The Installation and Cost of Air Conditioning the Pack Unit

The parties have divergent views about the difficulty and cost associated with installing air conditioning units at the Pack Unit. The Court heard extensive testimony from both parties' expert witnesses regarding this issue and has reviewed both expert reports. The experts testified about the cost associated with renting and purchasing air conditioning equipment. Since this is a preliminary injunction, however,²⁹ the Court focuses on the evidence regarding the temporary installation and rental of air conditioning units.

Plaintiffs' expert, Ron Brown, testified that the cost of renting, shipping, installing, and running air conditioning units for all of the dormitories of the Pack Unit for three months would be approximately \$108,000.³⁰ Hearing Tr. 2 at 36. Defendants' expert, Frank Traknyak, on the other hand, testified that the cost of air conditioning the dormitories for three months would cost over \$1.2 million. Hearing Tr. 7 at 204. The Court finds that both experts were discredited on cross-examination, and that neither of their estimates accurately describes the cost associated with air conditioning all housing areas of the Pack Unit for three months. However, the Court finds that Mr. Brown's estimate is closer to the actual cost, as explained below.

Mr. Traknyak based his estimate on the rental of a chill water system, which is a more expensive class of equipment than the package units recommended by Mr. Brown. Hearing Tr. 8 at 45. Mr. Traknyak also testified that generators would have to be rented in order to run the units, and that the fuel alone for these generators would cost \$316,000 per month. Hearing Tr. 7 at 204. However, the Pack Unit already owns a standby generator, and has excess capacity in its existing electrical supply, both of which could be used to power the air conditioning units.

²⁹ Under the Prison Litigation Reform Act, a preliminary injunction automatically expires after 90 days. 18 U.S.C.A. § 3626(a)(2).

³⁰ Mr. Brown also found that it would cost approximately \$20,000 to air condition the gym in the Pack Unit for three months. Hearing Tr. 2 at 44-46.

Hearing Tr. 8 at 65-69. Although the Court is not considering the costs involved with installing permanent air conditioning at the Pack Unit at this time, the Court notes that Mr. Traknyak testified that it would cost over \$22 million to install permanent air conditioning at the Pack Unit.³¹ *Id.* at 42. A large portion of this cost derives from the assumption that there would need to be significant changes to the building structure to ensure compliance with all current construction codes, such as the building code and energy code. *Id.* at 42. Mr. Traknyak's testimony was significantly undermined when he testified on cross examination that he knew that TDCJ does not have to comply with building codes, but still chose to incorporate those costs into his estimate. *Id.* at 29-30. The Court finds that Mr. Traknyak's estimate for the cost of temporarily air conditioning the Pack Unit is needlessly high and does not accurately reflect the true cost that would be incurred by TDCJ.

The Court also finds that Mr. Brown underestimates the cost of temporarily air conditioning the Pack Unit. Several problems with Mr. Brown's calculations were revealed on cross-examination. Mr. Brown used industry-standard software for calculating the amount of cooling necessary to bring the Pack Unit to his design point of 85 degrees. Hearing Tr. 2 at 14-15. The software accounts for a variety of factors, including the type of walls that surround the structure in question. The Pack Unit's walls are made of insulated sheet metal. *Id.* at 69. However, Mr. Brown based his calculations on insulated concrete. *Id.* Mr. Brown testified that these two materials are similar, and that using insulated sheet metal would not have made a significant difference in the outcome of the calculations. *Id.* at 69-70. The software used by Mr. Brown also accounts for location, but only has certain locations to choose from, so the user must select the closest one. Mr. Brown input "Austin" as the location, which is 100 miles away from

³¹ Mr. Traknyak also testified that it would cost \$79 million to install air conditioning at the Hutchins Unit; \$135 million at the Michael Unit; \$109 million at the Hodge Unit; and \$79 million at the Gurney Unit. Hearing Tr. 8 at 3-4.

the Pack Unit. Meanwhile, Mr. Traknyak input Easterwood Airport, which is 30 miles away from the Pack Unit. *Id.* at 71. Mr. Brown was using an older version of the software, which does not have Easterwood Airport as an option, so Austin was the closest location. *Id.* at 72. Although neither of these inaccuracies likely had a large effect on the resulting estimates, they do detract from Mr. Brown's overall credibility.

Mr. Brown also designed his air conditioning system to cool to 85 degrees, not including humidity, compared to Mr. Traknyak's cooling point of 80 degrees. Hearing Tr. 8 at 43-44. Mr. Traknyak's lower cooling point increases the amount of power required, and the resulting cost, of his system. *Id.* But the Court finds that Mr. Brown's cooling point of 85 degrees is not adequately protective, considering the high levels of humidity at the Pack Unit. Finally, Mr. Brown did not make any room for "redundancy"—the idea that if one unit breaks, there is another on hand that can supply sufficient air conditioning. Hearing Tr 2. at 68. Mr. Traknyak, on the other hand, included 15-20% redundancy in his estimate. Hearing Tr. 8 at 60. Because of the above-described problems with Mr. Brown's calculations, the Court finds that Mr. Brown's estimate is probably slightly lower than the actual cost. However, the Court finds that Mr. Brown's estimate is closer to the actual cost than Mr. Traknyak's estimate.

2. Window Screens

Plaintiffs request that Defendants be required to install window screens with insect-resistant mesh to prevent insect infiltration, while permitting airflow from open windows. Warden Herrera testified that, when he first became warden of the Pack Unit, the windows had mesh screens that kept out all insects. Hearing Tr. 4 at 76. There was a problem with inmates cutting the screens or pushing them out in order to smuggle contraband, so the prison replaced the screens with stainless steel screens. *Id.* at 76-78. These screens cannot be cut through, and are

bolted into place. *Id.* at 78. However, the holes between the wires are larger, allowing insects to get through. *Id.* at 78-79; Hearing Tr. 8 at 93. Mr. Vail, Plaintiffs' expert on corrections, testified that while he understands the need for the security screens, he has seen other prisons where screens that can keep out insects are placed on the outside of the security screen. Hearing Tr. 2 at 174. This way, security is not undermined, and insects are unable to enter the housing areas.

Mr. Ginsel testified that he believes placing an additional screen over the existing screen would hinder airflow into the housing areas. Hearing Tr. 5 at 154. While Mr. Ginsel has worked in corrections for many years, he is not an expert on climate or cooling, and as such his testimony on this issue must be discounted. It is certainly possible that an additional screen could hinder airflow, but the Court has been presented with no evidence upon which to make that determination.

As to cost, Mr. Ferguson, TDCJ's Director of Maintenance, estimated that installing mesh screens at the Pack Unit would cost approximately \$72,000. Hearing Tr. 8 at 94; Defs.' Ex. 120 at 4. Although Mr. Ferguson forgot to input the estimated cost of the screens themselves, the Court finds that Mr. Ferguson's estimate is unrealistically high. Hearing Tr. 8 at 93-94. Mr. Ferguson estimated that it would take 622 hours to install the screens—77 eight-hour days. Defs.' Ex. 120 at 4. Mr. Ferguson does not explain, in his report or his testimony, how he reached this number, or why it is so high. Mr. Ferguson also estimates spending over \$6,000 on paint and primer, presumably to paint the window frames, but does not explain why this is necessary for installation. *Id.* Accordingly, the Court discounts entirely Mr. Ferguson's testimony regarding the cost of installing window screens. The Court further finds that TDCJ's estimate about the cost of installing window screens exemplifies Defendants' consistent over-

estimation of the cost of implementing Plaintiffs' proposed remedies throughout the preliminary injunction hearing.

The Court finds that the men living in the housing areas with windows that open should not have to choose between the potential cooling effect from the windows, and insect infestations in their dormitories. The Court further finds that there is simple solution to this dilemma: placing mesh screens outside the security screens.

3. Creation of a Heat Wave Policy for the Pack Unit

Plaintiffs request that the Court order Defendants to develop a heat wave policy for the Pack Unit. The Court has already discussed the importance of a heat wave policy, and has found unpersuasive TDCJ's argument that the Incident Command System is a heat wave policy. Additionally, the Court (and both parties' experts) disagree with Defendants that it would be too difficult to devise a substantive policy that would apply to all units. Even if it were, Plaintiffs request that a heat wave policy be created for the Pack Unit only. Defendants have presented no convincing reasons why this should not be ordered, should the Court find an ongoing constitutional violation.

4. Other Remedies

Plaintiffs request many other remedies, such as opening all sealed windows, monitoring Plaintiffs' water intake, granting access to on-demand showers, announcing temperatures in the dormitories, scheduling respite, conducting wellness checks with medical staff, monthly inmate training, the use of Power Breezers and IcyBreeze units, distributing individual water coolers, and more. For the reasons explained in Section III, the Court does not find it necessary to discuss these remedies at this time.

II. Conclusions of Law

A. The Legal Standard

To obtain a preliminary injunction, the plaintiffs must establish “(1) a substantial likelihood of success on the merits, (2) a substantial threat of irreparable injury if the injunction is not issued, (3) that the threatened injury if the injunction is denied outweighs any harm that will result if the injunction is granted, and (4) that the grant of an injunction will not disserve the public interest.” *Janvey v. Alguire*, 647 F.3d 585, 595 (5th Cir. 2011); *Nichols v. Alcatel USA, Inc.*, 532 F.3d 364, 372 (5th Cir. 2008).³²

None of the four requirements has a fixed quantitative value. *Texas v. Seatrain Int’l, S.A.*, 518 F.2d 175, 180 (5th Cir.1975). Therefore, in applying the four-part test, “a sliding scale is utilized, which takes into account the intensity of each in a given calculus.” *Id.* This requires “a delicate balancing of the probabilities of ultimate success at final hearing with the consequences of immediate irreparable injury that possibly could flow from the denial of preliminary relief.” *Klitzman, Klitzman & Gallagher v. Krut*, 744 F.2d 955, 958 (3d Cir.1984).

The decision to grant or deny a preliminary injunction is discretionary with the district court. *Miss. Power & Light Co. v. United Gas Pipe Line Co.*, 760 F.2d 618, 621 (5th Cir.1985). However, because a preliminary injunction is an extraordinary remedy, it “should not be granted unless the party seeking it has clearly carried the burden of persuasion on all four requirements.” *Planned Parenthood Ass’n of Hidalgo Cty. Tex., Inc. v. Suehs*, 692 F.3d 343, 348 (5th Cir.2012).

³² “[A]t the preliminary injunction stage, the procedures in the district court are less formal, and the district court may rely on otherwise inadmissible evidence, including hearsay evidence.” *Sierra Club, Lone Star Chapter v. F.D.I.C.*, 992 F.2d 545, 551 (5th Cir. 1993).

B. Likelihood of Success on the Merits

1. The Constitutional Requirements

The Eighth Amendment expressly prohibits “punishment” that is “cruel and unusual.” U.S. Const. amend. VIII. “The Constitution does not mandate comfortable prisons, but neither does it permit inhumane ones.” *Farmer v. Brennan*, 511 U.S. 825, 832 (1994) (internal quotation marks and citation omitted). The Eighth Amendment imposes a duty on prison officials to provide “humane conditions of confinement” by ensuring that inmates receive adequate food, clothing, shelter, and medical care, and that “reasonable measures” are taken for inmate safety. *Id.*

A plaintiff must meet two requirements to establish an Eighth Amendment violation. First, “the deprivation alleged must be, objectively, sufficiently serious.” *Id.* at 834 (internal quotation marks and citations omitted). Conditions of confinement that deprive an inmate of “the minimal civilized measure of life's necessities . . . are sufficiently grave to form the basis of an Eighth Amendment violation.” *Wilson v. Seiter*, 501 U.S. 294, 298 (1991) (internal quotation marks and citation omitted). Second, the plaintiff must show that the prison official acted with deliberate indifference to that known risk. *Farmer*, 511 U.S. at 834.

2. Conditions of Confinement that Violate the Eighth Amendment

a. Substantial Risk of Serious Injury or Death

Plaintiffs have shown a substantial risk of serious injury or death as a result of the conditions at the Pack Unit. The Fifth Circuit has found extreme heat in prisons to violate the Eighth Amendment when insufficient mitigation measures are used. *Ball*, 792 F.3d 584 (affirming necessity of injunctive relief to protect inmates from high indoor temperatures); *Gates*, 376 F.3d at 339 (same). Outdoor conditions at the Pack Unit routinely exceed 100 degrees

during the summer months. During the hearing, a heat advisory was issued for the county in which the Pack Unit is located, warning that the heat index would reach “near or above 108” degrees that day. Evidence reveals that the conditions inside some of the housing areas are even hotter than those outside. Despite these conditions, which are known to cause a high risk of heat-related illness, Defendants have not found a way to cool the housing areas to a safe temperature, or to sufficiently counteract the risk without cooling the housing areas.

The evidence further shows that heat-related illness can lead to serious injury or death quickly, with little warning, and in ways that make it difficult for those experiencing the symptoms to get the proper help. Indeed, at least 23 men have already died from heat-related illnesses in other TDCJ facilities. Although TDCJ has implemented more mitigating measures in all facilities since those deaths, the Court has found that these mitigating measures are often ineffective, and that the risk of serious injury or death remains. This risk is especially heightened for inmates who suffer from conditions or take medications that impede the body’s ability to regulate its temperature.

Defendants emphasize that they have implemented mitigating measures above and beyond those mandated by the Fifth Circuit in *Ball*, 792 F.3d at 599 (listing measures such as diverting cool air from the guards’ pod into the prison tiers; allowing inmates to access air conditioned areas during their tier time; allowing access to cool showers at least once a day; providing an ample supply of cold drinking water and ice at all times; and supplying personal ice containers and individual fans). But in listing those measures, the Fifth Circuit did not hold that those were the only measures necessary to meet the requirements of the Eighth Amendment. Rather, the Fifth Circuit found that the district court’s order to air condition Louisiana’s death row violated the Prison Litigation Reform Act, which requires district courts to order remedies

that eliminate the constitutional injury without more. *Id.* at 599. Because measures short of air conditioning existed but had not been implemented, the Fifth Circuit found that those measures could eliminate the injury in a less intrusive manner than air conditioning. *Id.* Implicit in the Fifth Circuit's holding is that, if those measures were subsequently found to be insufficient to rectify the constitutional violation, other remedies, such as air conditioning, would be appropriate. Indeed, the Fifth Circuit has affirmed determinations that prison officials violated the Eighth Amendment despite evidence that the officials implemented some remedial measures, when those remedial measures proved inadequate to protect inmates from extreme heat. *Webb v. Livingston*, 618 Fed. Appx. 201, 209 n. 7 (5th Cir. 2015) ("the mere presence of remedial measures would not end the inquiry, as such measures must be adequate.").

Although Defendants have implemented the mitigating measures contemplated by the Fifth Circuit in *Ball*, Plaintiffs have shown that those measures are insufficient to protect against a substantial risk of harm. Plaintiffs testified that the conditions in the housing areas are unbearable, and cause them to experience the symptoms of heat-related illnesses on a daily basis. The mitigating measures put in place by Defendants are by and large ineffective at reducing the heat stress placed on Plaintiffs' bodies. In some cases, they even increase the heat index, as exemplified by the Power Breezers that add humidity and the fans that blow hot air on Plaintiffs' bodies. In other cases, they create new problems, such as the open windows that allow insects into the housing areas. They do not stop Plaintiffs from experiencing the symptoms of heat-related illnesses and do not reduce the risk of serious injury or death to a socially-acceptable level. In sum, the Court concludes, based on the findings detailed in the previous sections, that Plaintiffs have shown a substantial risk of serious illness or death from the current conditions at the Pack Unit.

b. Deliberate Indifference

Deliberate indifference is defined as a failure to act where prison officials have knowledge of a substantial risk of serious harm to inmate health or safety. *Farmer*, 511 U.S. at 837. The deliberate indifference standard is an “extremely high” standard to meet. *Domino v. Texas Dep’t of Criminal Justice*, 239 F.3d 752, 756 (5th Cir. 2001). A prison official is not liable for deliberate indifference unless the official knows of and disregards an excessive risk to an inmate’s health or safety. *Id.* The official must be aware of facts from which the inference could be drawn that a substantial risk of serious harm exists, and he must also actually draw the inference. *Id.* “Whether a prison official had the requisite knowledge of a substantial risk is a question of fact subject to demonstration in the usual ways, including inference from circumstantial evidence.” *Ball*, 792 F.3d at 594 (quoting *Farmer*, 511 U.S. at 826). However, a prison official’s knowledge of a substantial risk of harm may be inferred if the risk was obvious. *Farmer*, 511 U.S. at 829.

The evidence in the record reveals that Defendants know that a risk of serious harm exists as a result of the extreme temperatures at the Pack Unit. Defendants are aware that nearly two dozen men have died of heat-related illness at TDCJ facilities, and that inmates and correctional officers regularly experience heat-related illnesses. Furthermore, their own policies reflect the known danger of the heat in Texas. For example, as stated in TDCJ’s “Training Circular” on extreme heat, “A Heat Advisory is issued within 12 hours of the onset of extremely dangerous heat conditions . . . Take precautions to avoid heat illness. If you do not take precautions, you could become seriously ill or even die.” Pls.’ Ex. 53 at 2. Similarly, as written in TDCJ’s “Heat Directive” email, “It is the time of year again, when employees and offenders may be affected by extreme heat conditions. Due to the potential for extreme heat conditions in the coming months,

it is imperative that everyone take precautions to help prevent or reduce heat-related illnesses.” Defs.’ Ex. 7 at 1. As to heat waves, Warden Herrera testified that he knows another heat wave will hit the Pack Unit at some point in the future, but stated that he has no intention of creating a heat wave policy unless ordered to do so by this Court or his superiors. Defendants’ expert testified that he believes there should be a heat wave policy, and that the current mitigation measures will not suffice in the event of a heat wave. Considering this evidence, the Court concludes that Defendants are aware of a substantial risk of serious harm to Plaintiffs. Alternatively, the Court concludes that the risk of harm from the extreme temperatures at the Pack Unit is obvious.

Specifically with regard to the heat-sensitive subclass, the evidence shows that Defendants are aware of the increased risk of harm faced by heat-sensitive inmates. TDCJ’s Administrative Directive 10.64 discusses offenders who have been identified “as having a condition or being on a medication that makes the offender more susceptible to temperature-related issues.” Defs.’ Ex. 1 at 1. As stated in TDCJ’s “Training Circular”:

TDCJ and medical staff shall work together to identify offenders susceptible to temperature-related illness due to medical conditions. Medical staff shall provide correctional staff a list of offenders susceptible to temperature-related illness due to medical conditions, including offenders on prescribed diuretics or other medications known to inhibit the dissipation of heat.

Pls.’ Ex. 53 at 3. Similarly, TDCJ’s “Heat Directive” instructs officials to provide the heat-restriction list, “a list of offenders identified as heat sensitive,” to all officers assigned to housing areas. Defs.’ Ex. 7 at 1. Accordingly, the Court finds that Defendants are aware of an increased risk of serious injury or death faced by inmates with heat sensitivities.

The evidence shows that, despite knowing of the substantial risk of harm faced by all inmates at the Pack Unit, and the increased risk of harm faced by the heat-sensitive inmates,

Defendants have disregarded this risk. Defendants argue that they have implemented several mitigating measures since the deaths in 2011 and 2012, and that this shows that they are not deliberately indifferent. But the effectiveness of the measures implemented by TDCJ is relevant to the Court's analysis. *Webb*, 618 Fed. Appx. at 209 n. 7 (“the mere presence of remedial measures would not end the inquiry, as such measures must be adequate.”).

The Court has already found that the large fans and personal fans used in the Pack Unit dormitories are ineffective, and are in fact potentially harmful, above temperatures of 95 degrees. Defendants are aware of this fact—indeed, it is written into their “Training Circular.”³³ Yet they still use fans as one of the major mitigating measures in the housing areas, despite knowing that the heat index regularly reaches 95 degrees. One week before the hearing on Plaintiffs' motion for preliminary injunction, Defendants placed eight “Power Breezers” in several of the housing areas at the Pack Unit. These fans release a light mist, slightly cooling the area immediately in front of the fan. However, Defendants' own expert opined that Power Breezers would not be effective in the high-humidity environment at the Pack Unit, and would only increase the humidity, thus potentially raising the heat index.³⁴ The Court found that Power Breezers are an ineffective mitigating measure. Additionally, the open windows in some of the housing units provide little or no cooling effect during the day, but may have some cooling effect at night. However, the gauge on the window screens is too large, allowing insects to infest the dormitories at night. If Plaintiffs were to close the windows in the housing units, though, they would lose any potential cooling effect from open windows, as well as the additional ventilation that windows provide. This exact scenario was considered by the Fifth Circuit in *Gates v. Cook*, 376 F.3d 323 (5th Cir. 2004). The Fifth Circuit held that insufficient gauge on window screens could cause an

³³ See Section I.F.1, *supra*.

³⁴ See *id.*

Eighth Amendment violation by exacerbating heat problems if it deterred inmates from keeping their windows open. *Id.* at 340.

Defendants have also emphasized the extent of their training, for inmates and correctional officers, about the risks and symptoms of heat-related illness. These training documents highlight the need to “take action” during heat advisories that often occur during the summertime. Yet TDCJ does not disseminate the advisories that it receives to the affected regions. As a result, prison officials and inmates remain unaware of the substantial risk that they face. This ignorance is exacerbated by Warden Herrera’s decision to stop measuring the indoor heat index at the Pack Unit when this lawsuit was filed.

Finally, the Pack Unit has implemented a respite program, which it touts as an extremely effective mitigation measure. The Court has found, however, that this program often requires the men at the Pack Unit—a large proportion of whom are older or have mobility impairments—to stand for long periods of time, sometimes with their noses against a wall; sit in silence; or walk from one area of the prison to another as the small respite areas become full. Furthermore, because the Pack Unit only air conditions spaces intended for use by administrators and staff, the program can accommodate only a fraction of the inmates at the Pack Unit before the normal operations of the prison would have to start shutting down, as Warden Herrera testified. And when a larger group of men attempted to access respite during the hearing, they were threatened with retaliation by at least one of the correctional officers. The Court has found that this program does not function in a way that is an effective mitigating measure when considering the extreme temperatures faced by inmates in their housing areas.

What TDCJ did not do in the face of the substantial risk of harm is also relevant to the Court’s analysis. The Court has found that TDCJ has never considered installing air conditioning

in any of its facilities that were not built with air conditioning, even after inmates started dying from heat-related illness. Although the Court understands that the task of retrofitting facilities is considerable, even Defendants' expert thought that it should have been considered. Hearing Tr. 7 at 135. TDCJ has also never examined options, short of retrofitting facilities, that could place heat-sensitive inmates in air conditioned housing. Before 2013, at which point TDCJ received a media inquiry, TDCJ did not know how many air conditioned beds existed in its facilities. TDCJ has never conducted an official analysis to look into the possibility of housing heat-sensitive men and women in the pre-existing air conditioned beds. This could have been done using data that TDCJ already has, would have been a minimal burden to TDCJ, and could have resulted in protecting men and women that TDCJ knows are vulnerable to heat-related illness. Finally, the Court has found that Defendants have failed to develop a heat wave policy, despite the ten deaths that occurred in TDCJ during the 2011 heat wave. Both parties' experts agreed that Defendants should have a heat wave policy in place, and Defendants' expert testified that the current mitigating measures would not keep inmates safe in the event of another heat wave.³⁵ Defendants' reasons for failing to develop a heat wave policy are exceedingly unpersuasive.

In sum, the Court finds that, despite a significant risk of harm faced by the men at the Pack Unit, Defendants have done the bare minimum. They have implemented mitigating measures that they know, or should know, are ineffective given the extreme heat at the Pack Unit, and they have failed to consider seriously the many more effective options available to them. In doing so, they have ignored the risk of harm faced by the population they serve. Accordingly, Plaintiffs have shown that Defendants are deliberately indifferent, and as such, Plaintiffs have shown a likelihood of success on the merits of their Eighth Amendment claim.

³⁵ See Section I.F.3 *supra*.

In sum, the Court finds and concludes that:

- The outdoor heat index at the Wallace Pack Unit (“Pack Unit”) regularly exceeds 100 degrees in the summer, and the conditions within some of the housing units are even hotter.
- The extreme heat inside and outside the Pack Unit places stress on the human body, causing a risk of illness. This risk, while present for all, is heightened for some—men who are heat-sensitive, with conditions or medication regimes that decrease the body’s ability to regulate temperature.
- The mitigation measures put in place by TDCJ and Pack Unit officials to combat the extreme heat are insufficient to decrease the risk of harm to an acceptable level.
- The conditions of confinement at the Pack Unit violate the Eighth Amendment right to be free from cruel and unusual punishment.

C. Irreparable Injury

“When an alleged deprivation of a constitutional right is involved, . . . most courts hold that no further showing of irreparable injury is necessary.” 11A WRIGHT & MILLER, FEDERAL PRACTICE & PROCEDURE, § 2948.1 (3d ed. 1998), *see also ODonnell v. Harris Cty., Texas*, — F.Supp.3d —, 2017 WL 1735456, at *81 (S.D. Tex. Apr. 28, 2017). Plaintiffs have shown that the conditions of confinement at the Pack Unit create a substantial risk of serious injury or death. The heat-sensitive Plaintiffs have testified that they feel, on a daily basis, symptoms of heat-illness, even with access to all of the mitigating measures in place at the Pack Unit.³⁶ Plaintiffs have presented evidence that even young and healthy offenders are at serious risk in the temperatures at the Pack Unit, and that they do not have adequate access to respite in air

³⁶ *See* Section I.F.1 *supra*.

conditioning.³⁷ The Warden of the Pack Unit has credibly and consistently testified that, without an injunction from this Court, the conditions of the Pack Unit will not change.³⁸ Hearing Tr. 4 at 79; 85; 106; 109; 118-119. As a result, Plaintiffs will continue to be denied their Eighth-Amendment right to conditions of confinement that do not subject them to an unacceptable risk of harm.

The record evidence shows that Plaintiffs' injury is irreparable. Twenty-three individuals have already died from heat-related illnesses at other facilities in TDCJ. Those who experience heat stroke but do not die are at risk of being permanently disabled. Furthermore, the symptoms of heat exhaustion and heat stroke cause severe pain and suffering. Several of the plaintiffs who testified have already experienced heat exhaustion, and all of them described experiencing symptoms of heat-related illness. The heat-sensitive inmates face a particularly high risk of suffering from heat-related illness, as their thermoregulatory functions are compromised. This factor weighs strongly in favor of granting Plaintiffs' request for injunctive relief. *See also Ball*, 988 F.Supp.2d at 688 (irreparable harm from heat in Louisiana death row that created a high probability of developing a heat-related illness).

D. Balancing the Harms

Courts "must balance the competing claims of injury and must consider the effect on each party of the granting or withholding of the requested relief." *Amoco Prod. Co. v. Village of Gambell, Alaska*, 480 U.S. 531, 542 (1987). "In exercising their sound discretion, courts of equity should pay particular regard for the public consequences in employing the extraordinary

³⁷ *See id*; Section I.D. *supra*.

³⁸ At times, the Warden seemed to be inviting a judicial decree to prompt reforms or improvements that otherwise would never materialize.

remedy of injunction.” *Weinberger v. Romero-Barcelo*, 456 U.S. 305, 312 (1982) (citation omitted).

Defendants produced plentiful evidence about the cost of implementing each requested remedy. Although the Court has found that Defendants’ estimates were often overstated, the Court acknowledges, and takes seriously that Defendants will incur no small cost in implementing the remedies required by this injunction. However, the evidence in the record shows that TDCJ has an annual budget of over \$3 billion, and an annual maintenance budget of over \$40 million. Hearing Tr. 5 at 105; Docket Entry No. 720-8 at 10. Thus, the Court finds that the remedies ordered will not negatively impact the public, because TDCJ has sufficient budgetary resources with which to implement the remedies. Even if the remedies ordered would be “fiscally catastrophic” for TDCJ, as Defendants maintain they are, the Fifth Circuit has held that “inadequate resources can never be an adequate justification for depriving any person of his constitutional rights.” *Udey v. Kastner*, 805 F.2d 1218, 1220 (5th Cir. 1986).

The Court further finds that the security of the prison will not be undermined by the remedies ordered by this Court. The Court grants substantial discretion to the prison to implement the remedies in a way that takes into consideration all of the security concerns inherent in a prison. Accordingly, public safety will not be compromised. Conversely, if the Court were to fail to order remedies in this lawsuit, Plaintiffs’ safety would be severely undermined, leading to a substantial risk of irreparable injury. Accordingly, the Court finds that this factor weighs heavily in favor of granting a preliminary injunction.

E. The Public Interest

“It is always in the public interest to prevent the violation of a party’s constitutional rights.” *O’Donnell*, — F.Supp.3d —, 2017 WL 1735456, at *83 (citing *Simms v. District of*

Columbia, 872 F.Supp.2d 90, 105 (D.D.C. 2012) (collecting cases)). The Court has found that Plaintiffs' Eighth Amendment rights are being continuously violated by the conditions of confinement at the Pack Unit. Accordingly, this factor weighs heavily in favor of granting a preliminary injunction.

F. Bond

A federal court may waive the bond requirement. Fed. R. Civ. Pro. 65(c); *City of Atlanta v. Metro. Atlanta Rapid Transit Auth.*, 636 F.2d 1084, 1094 (5th Cir. 1981); *Corrigan Dispatch Co. v. Casa Guzman, S.A.*, 569 F.2d 300, 303 (5th Cir. 1978). The Court finds that waiving the bond is appropriate in this case; Plaintiffs are indigent, *see Wayne Chem., Inc. v. Columbus Agency Serv. Corp.*, 567 F.2d 692, 701 (7th Cir. 1977), and Plaintiffs have brought this suit to enforce constitutional rights, *see City of Atlanta*, 636 F.2d at 1094. No bond is imposed.

III. Remedy

Under the Prison Litigation Reform Act ("PLRA"), "[i]n any civil action with respect to prison conditions, to the extent otherwise authorized by law, the court may enter a temporary restraining order or an order for preliminary injunctive relief. Preliminary injunctive relief must be narrowly drawn, extend no further than necessary to correct the harm the court finds requires preliminary relief, and be the least intrusive means necessary to correct that harm. The court shall give substantial weight to any adverse impact on public safety or the operation of a criminal justice system caused by the preliminary relief and shall respect the principles of comity set out in paragraph (1)(B) in tailoring any preliminary relief. Preliminary injunctive relief shall automatically expire on the date that is 90 days after its entry, unless the court makes the findings required under subsection (a)(1) for the entry of prospective relief and makes the order final before the expiration of the 90-day period." 18 U.S.C.A. § 3626(a)(2).

Paragraph (1)(B) of the PLRA states, “The court shall not order any prospective relief that requires or permits a government official to exceed his or her authority under State or local law or otherwise violates State or local law, unless—

- (i) Federal law requires such relief to be ordered in violation of State or local law;
- (ii) the relief is necessary to correct the violation of a Federal right; and
- (iii) no other relief will correct the violation of the Federal right.” 18 U.S.C.A. § 3626(a)(1)(B).

“The PLRA greatly limits a court’s ability to fashion injunctive relief.” *Ball*, 792 F.3d at 598. “Under the PLRA, plaintiffs are not entitled to the most effective available remedy; they are entitled to a remedy that eliminates the constitutional injury.” *Id.* at 599, citing *Westefer v. Neal*, 682 F.3d 679, 683–84 (7th Cir. 2012). “In Eighth Amendment cases, plaintiffs can only obtain a remedy that reduces the risk of harm to a socially acceptable level.” *Id.*

The Court has concluded that Plaintiffs have demonstrated a likelihood of success on the merits of their Eighth Amendment claim. They have shown that conditions in the housing areas of the Pack Unit, even with all of the mitigating measures in place, subject them to a substantial risk of serious injury or death. This risk is significantly higher for plaintiffs in the heat-sensitive subclass.

The Court does not minimize in any degree the limitations of the PLRA in ordering the relief necessary to cure this violation. With regard to the young and healthy inmates, given the mandate that any relief ordered be narrowly drawn, extend no further than necessary to correct the harm, and be the least intrusive means necessary to correct that harm, the Court concludes that it cannot order the Pack Unit to lower the temperatures in the housing areas at this time. Instead, it orders the Pack Unit to implement a fully functioning respite program—one that

corrects the many problems identified by the Court, and one that has the capacity to accommodate, realistically and comfortably, a significant portion of the prison. The Court is concerned that, even with a fully functioning respite program in place, young and healthy inmates may still be subjected to unconstitutional conditions. This is especially so given the possibility of another heat wave in the near future. However, given the potential effectiveness of a respite program for young and healthy inmates, the Court concludes that this, along with the other mitigation measures currently in place, may correct the harm, and the Court is bound by the PLRA not to order more extensive corrective measures in the housing areas for the young and healthy inmates at this time.

As to the heat-sensitive subclass, however, the Court concludes that even a fully functioning respite program will not correct the harm. The Court heard compelling expert testimony that the measures implemented by the Pack Unit, even if functioning as intended, do not reduce the risk of substantial harm to inmates in this subclass. The conditions and medications encompassed in the heat-sensitive subclass make those Plaintiffs significantly more likely to experience heat-related illness, even with access to respite. The Court has found that heat-sensitive Plaintiffs who are already accessing respite on a daily basis are still experiencing the symptoms of heat-related illnesses. These illnesses can occur rapidly and with little warning, and can lead to serious pain or death. The only way to reduce this risk to an acceptable level is to house heat-sensitive inmates in areas with apparent temperatures lower than 88 degrees. Because TDCJ has made clear that it cannot house the heat-sensitive Plaintiffs in any of TDCJ's pre-existing air conditioned beds, Defendants must lower the apparent temperatures in the housing areas where the heat-sensitive plaintiffs reside to a heat index of no more than 88 degrees. This requirement does not extend further than necessary to correct the harm, because the Court does

not order Defendants to reduce temperatures to a level that may be comfortable, but simply to a level that reduces the significant risk of harm to an acceptable one.

The Court further orders Defendants to place window screens with a gauge that is small enough to guard against insects on the outside of the security screens of the dormitories. Finally, the Court orders Defendants to develop a heat wave policy for the Pack Unit that dictates the criteria for determining when action should be taken, and what those actions should be, in the event of a heat wave.

The Court concludes that the relief ordered does not require Defendants to exceed their authority under Texas law. As previously discussed, TDCJ has an annual budget of \$3 billion, and an annual maintenance budget of \$40 million. Although the cost of implementing the remedies is still unknown, the Court concludes that the cost will come nowhere near the annual maintenance budget for TDCJ. In fact, Defendants' expert concluded that air conditioning all of the Pack Unit for the summer would cost \$1.2 million. The Court found that this estimate was too high, and that the estimate by Plaintiffs' expert of \$110,000 was closer to the actual amount. Regardless, the Court certainly does not order Defendants to air condition all of the housing areas in the Pack Unit. And the Court does not even require any air conditioning of the areas now used to house the heat-sensitive subclass. Defendants may re-configure areas that are currently air conditioned to accommodate the heat sensitive, or move them to other facilities in Texas. Defendants have access to expertise in many different fields and can no doubt draw on that expertise in considering different options to afford the heat sensitive a safer living environment. It is within TDCJ's authority to use its pre-existing budget to comply with this order. However, if it is determined that TDCJ does not have authority to comply with this order, the Court concludes that federal law requires the relief to be ordered, the relief is necessary to correct the

violation of Plaintiffs' Eighth Amendment rights, and no other relief will correct the violation of their Eighth Amendment rights.

Although normally a court is required by Rule 65 of the Federal Rules of Civil Procedure to describe, in reasonable detail, the acts required by its injunction, the Supreme Court has held that in cases against state prisons, a district court must give "adequate consideration to the views of state prison authorities." *Lewis v. Casey*, 518 U.S. 343, 362 (1996). This Court recognizes the difficulties of running a prison such as the Pack Unit, and the various considerations that administrators must weigh when making any changes. Thus, instead of "dictat[ing] precisely what course the State should follow," *Lewis*, 518 U.S. at 362, quoting with approval *Bounds v. Smith*, 430 U.S. 817, 818 (1977), in designing a more robust respite program and in determining how to lower the temperatures in the housing areas of the heat-sensitive plaintiffs, the Court orders that Defendants submit proposed remedies that comport with the Court's order. However, because the hottest days of summer are ongoing, these remedies should be submitted within 15 days of this order. A hearing is hereby set for August 8, 2017, at 2:00 p.m., at which time Plaintiffs can respond to Defendants' proposals. The remedies ordered by this Court must be implemented within a time frame to be determined at the hearing.

In sum, the Court orders that:

- Defendants correct the numerous problems with the existing respite program identified by the Court in this opinion;
- Defendants lower the temperature in the housing areas of heat-sensitive inmates;
- Defendants install window screens, with gauges that block insects, in the windows of the housing areas;
- Defendants develop a heat wave policy for the Pack Unit;

- Defendants propose remedies that conform to the Court's order within 15 days.

IV. Conclusion

The Court can anticipate that there will be many among the public who will recount stories of having survived abodes in hot climates without the benefit of modern technology. The Court also has personal experience to that effect. Further, the Court is well aware that, in the history of correctional institutions, technical melioration of summer heat is a late arrival.

The Court is unpersuaded that the experience of those in the free world can be fairly compared with those who are imprisoned. Choice abounds among those on the outside, whereas the availability of choices to the imprisoned is strictly controlled by third parties. In the free world, those who are hot can visit air conditioned spaces in shopping malls, museums, houses of worship, community centers, public transportation, automobiles, and in the homes of friends and family. Swimming pools may be available. And those in the free world do not have to confront the fact that the space they inhabit today will likely be the space that they will inhabit for years, and even decades, to come. Nor do they commonly suffer from the co-morbidities discussed herein.

Similarly, to deny modern technology to inmates today for the simple reason that it was not available to inmates in past generations is an argument that proves too much. No one suggests that inmates should be denied up-to-date medical and psychiatric care, or that they should be denied access to radio or television, or that construction of prison facilities should not use modern building materials. The treatment of prisoners must necessarily evolve as society evolves.

As Dostoyevsky said more than 150 years ago, “The degree of civilization in a society can be judged by entering its prisons.”³⁹ Prisoners are human beings with spouses and children who worry about them and miss them. Some of them will likely someday be shown to have been innocent of the crimes of which they are accused.⁴⁰ But, even those admittedly guilty of the most heinous crimes must not be denied their constitutional rights. We diminish the Constitution for all of us to the extent we deny it to anyone.

The Court has considered an extensive record consisting of hundreds of exhibits and 13 days of testimony, heard over the course of two summers. The Court has also visited the Pack Unit. The record evidence, the arguments of counsel, and the case law on prison heat all show that Plaintiffs are entitled to preliminary injunctive relief. Each summer, including this one, Plaintiffs face a substantial risk of serious harm from the sweltering Texas heat, and Defendants have been deliberately indifferent in responding to this risk.

The Court does not come to its decision lightly. “Institutions charged with safeguarding the public have an extraordinary trust and a difficult task. The difficulty and importance of the task cannot defeat an equally important public trust . . . —to enforce the Constitution.” *Odonnell*, — F.Supp.3d —, 2017 WL 1735456, at *89. The punishment of men and women who have been convicted of crimes in our society is limited by the bounds of the Eighth Amendment. The Court concludes that the conditions in the Pack Unit have slipped beyond those bounds, requiring intervention by this Court and injunctive relief for Plaintiffs.

Plaintiffs’ clear likelihood of success on the merits of their claims at trial, the irreparable injuries they will suffer without an order of relief from this Court, the public interest, and the

³⁹ Fyodor Dostoyevsky, *The House of the Dead* 76 (C. Garnett trans., 1957).

⁴⁰ 52 men and women have been exonerated by DNA in Texas. The Cases, The Innocence Project, <https://www.innocenceproject.org/all-cases/#texas,exonerated-by-dna>.

relative weight of the harms should the Court refuse relief all weigh strongly in Plaintiffs' favor.
Accordingly, the above-described relief is ordered.

SIGNED in Houston, Texas, on this the 19th day of July, 2017.

A handwritten signature in black ink, appearing to read "Keith P. Ellison". The signature is written in a cursive style with a horizontal line underneath it.

KEITH P. ELLISON
UNITED STATES DISTRICT JUDGE