CLIMATE RESILIENCY IN SAN ANTONIO: MOVING TOWARD JUSTICE

June 2015

Centro por la Justicia / Southwest Worker Union

SOUTHWEST WORKERS' UNION

A Note from Centro por la Justicia / Southwest Worker Union

San Antonio, like the nation, is facing two critical crises: economic hardship and the challenge of responding to the accelerating climate crisis. Climate change is anticipated to exacerbate intense flooding, severe drought and already deteriorating air quality conditions. It will increase destruction from wildfires and put Texans at risk of contracting infectious diseases.

Brought on by an addiction to fossil fuels, the impacts of climate change are already upon us. In the past decades, the length and intensity of heat waves have increased, drought is the norm and the air we breathe is dirtier. As these climate crises accelerate, the gap between rich and poor widens. San Antonio, the nation's 7th largest city, is now over 70% people of color and one of the most segregated cities in the country. Among the West, South and East Side sectors of San Antonio, poverty rates is near 30% for Latinos and Blacks, compared to 8% for Whites. Employment in low-wage industries is prominent for these areas.

Not everyone is equally impacted. Those unable to afford air conditioning and important weatherization changes to their homes will be most vulnerable, as well as the young, the elderly and those with existing health problems. These same communities are those most likely to have suffered from the environmental and health impacts that result from dirty energy production.

Looking forward, the primary focus is not just changing energy production and usage, but developing resilient communities that are sustainable and healthy, that support vibrant local economies and the well being of residents (current and future). There is great promise in local renewable energy generation and energy efficiency programs that are accountable to the community, produce healthier neighborhoods, reduce energy costs, create good jobs, build the local economy, and address climate change.

We have a unique opportunity to design and implement comprehensive sustainability and community-based green economy plans in San Antonio that will bring local solutions to large-level systems, transforming society while transforming communities. Now is the time to move forward with programs that will protect all San Antonio residents, especially those most vulnerable. Together, we can transform San Antonio into a model of climate resiliency through creativity, innovation and participation.

Vision

As racially and economically marginalized communities, we have disproportionately suffered from the causes and consequences of climate change while engaging in struggles for social, economic and environmental justice. We envision working in collaboration to build climate resilient communities with local solutions while strengthening the local economy. Low-income frontline communities will lead a scalable, and socio-economically just transition away

from unsustainable energy production and use – the root causes of climate change – and move towards local living economies. Our re-localized economies will be ecologically grounded, produce community wellbeing, democratize decision-making, support working families, and promote local control of resources (including land, water, and food systems).

Who we are

Centro por la Justicia - Southwest Workers Union (SWU) unites independent grassroots groups of low-wage workers, community residents, families and youth in one organizational struggle for environmental justice, worker rights and community empowerment. Based in San Antonio, Texas, SWU is composed of 95% working-class members of color and works as a multi-lingual, multi-racial and multi-issue social change organization. The SWU mission is to empower its members through education, leadership development, civic engagement, and direct action to have a voice in decision and policy-making processes. The aim is to build multi-generational grassroots power to create sustainable systemic change for social, economic, and environmental justice and to build the movement for dignity and justice.

This document

In collaboration with the University of North Carolina Chapel Hill, we developed a series of factsheets. The aim is to describe consequences of the climate crisis, present current challenges in the light of environmental and economic justice, describe current programs related to climate resiliency and offers insights into future directions. We emphasize the way that our continuing dialogues and collaborations benefit all San Antonio residents equally.

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AIR QUALITY

As climate change progresses, San Antonio air quality will be adversely affected by pollution from increased energy consumption, rising temperatures and environmental changes.

Vulnerabilities:

1. As San Antonio's population grows, there will continue to be an increasing number cars, buses, homes, and buildings, all requiring energy inputs. Without proper planning, this growth could exacerbate climate change and public health problems.[1]
    a. Increased cars, trucks and industry release particulate matter (PM_{10} and $PM_{2.5}$), nitric oxides (NO_x), sulfates (SO_2), polycyclic aromatic hydrocarbons (PAHs), and volatile organic compounds (VOCs).[2]
    b. Diesel (from trucks) is responsible for early death, chronic bronchitis, chronic obstructive pulmonary disorder (COPD), cardiovascular illness, asthma and other physical ailments for people living nearby.[3, 4, 5]
    c. VOCs react with sunlight and heat to become ozone, which creates significant respiratory problems.[6] In 2013, the American Lung Association gave Bexar County an *F* for its poor ozone quality in its State of the Air report.[7]
        i. Sunlight and heat catalyze the production of ozone and airflow patterns pull ozone generated in rural areas into San Antonio.[1]
        ii. San Antonio's high air pollution levels coincide with the surge in development of shale gas and oil extraction in the Eagle Ford Shale that began in 2008.[8, 9]
        iii. San Antonio risks being designated a nonattainment area by the U.S. Environmental Protection Agency (EPA) for its high ground ozone levels (poor air quality).[10]
        iv. *Low-income communities of color are disproportionately exposed to high levels of air pollution, such as $PM_{2.5}$ and ozone.*[11] These disparate exposures contribute to greater incidences of asthma, other respiratory illnesses,

cancers, birth defects and psychological distress.[12]

2. Without proper planning, San Antonio faces decreasing tree and vegetative cover, which will negatively impact the city's ecological quality of life and contribute to poor air quality.[1]
    a. Plants absorb pollutants including ozone and CO_2.
    b. *Many freeways are routed through, and industrial facilities are disproportionately placed in or near, low-income communities and communities of color, meaning these communities are exposed to higher levels of pollution.*[13]

3. San Antonio wastes energy. It is estimated that nearly 36% of total energy consumption could be saved through efficiency measures at the residential level.[14]
    a. Intense air conditioning needs will require more energy use and will lead to greater air urban pollution.
    b. A lack of weatherization including insulation and energy efficient air conditioners, especially for low-income populations for which renovations are often cost-prohibitive, means energy is wasted and pollution could be reduced.
    c. In 2008, *Bexar County was ranked 17th highest in the nation for CO_2 emissions*[15] with approximately 12 million tons contributed by coal and gas plants operated by CPS Energy.[16]

Assets:

1. The Alamo Area Council of Government (AACOG) offers a Weatherization Assistance Program for low-income residents to install better insulation, air conditioning, and other weatherizing renovations. Renters are permitted to apply.[17]

2. CPS Energy, San Antonio's public power agency, is gradually closing its JT Deely coal fired power plant.[18] However, any additional pressure to extract fossil fuels from the Eagle Ford Shale Play, and could result in a net increase in pollution for the San Antonio region.

3. In 2014, *San Antonio ranked 6th in the nation for installed solar power infrastructure.*[19] San Antonio also purchases wind-generated power from west Texas and has great potential for expansion.[20]

Opportunities:

1. San Antonio's weatherization programs spearheaded by AACOG could be greatly expanded. AACOG should provide additional community educational demonstrations and

work with community-based organizations to ensure low-income populations benefit from weatherizing their homes.

   a. *Weatherization programs should continue training and hiring local workers at livable wages.*

2. Progressive payment schemes for energy should be incorporated, such as higher rates for greater consumption, to encourage people to conserve energy.

3. Improved regulations at drilling sites, more frequency inspections and end of flaring of gas along the Eagle Ford shale will improve regional air quality and decrease health impacts.

4. San Antonio should capitalize on the closing of old coal energy facilities by heavily investing in renewable energy sources like solar and wind power.
   a. The city should support stronger renewable portfolio standards and find ways to offer solar infrastructure and net metering incentives to low income residents who need it most.

5. San Antonio should complete widespread public education for the importance of vegetation for air quality and reducing energy bills.
   a. The city should provide substantial subsidies for low-income communities to implement xeriscaping and other cost saving measures that improve their microclimate's air and reduce their need for excessive air conditioning.

DROUGHT

In the face of climate change, San Antonio will be impacted by more intense and frequent droughts, meaning that the city must collaborate to ensure a secure equitable water supply for people and the environment.

Vulnerabilities:

1. As climate change intensifies, the Southwest will continue to be impacted by frequent, intense drought.[21, 22]
    a. Droughts and extreme heat negatively affect the quality of surface water. These conditions lead to high water temperatures, eutrophication and concentration of toxicants and other pollutants, which would otherwise be diluted during normal flow.[23]
    b. Drought may increase concentration of sewage that must be treated and disposed of to preserve water quality.[24]

2. 90% of San Antonio's drinking water comes from Edwards Aquifer, a groundwater source that recharges from rainwater and underground springs, serving over 1.6 million people. Other water sources include other aquifers, local lakes and the San Antonio Water System (SAWS) maintains Twin Oaks Aquifer storage.[25]
    a. *By 2060, the South Central Texas region is expected to see a 75% population increase and a 32% water demand increase*, mostly going to municipal areas.[26]
    b. Significant agricultural water requirements and expansion to industrial energy extraction including hydraulic fracturing ("fracking") in the Eagle Ford Shale Play places increasing demands on local water supplies.[27]
    c. Water quality in untapped aquifers in South Texas are likely impacted by drilling activity and underground injection/waste disposal wells.[28]

3. Edwards Aquifer may not remain a viable water source as its recharging process is increasingly impeded.
    a. *San Antonio's groundwater does not effectively recharge during drought.*[29] As drought becomes more common, Edwards Aquifer may not remain a viable water source.
    b. Construction projects, including a proposed golf course over the aquifer recharge zone along with quarry activity, have recently threatened the aquifer.[30]
    c. Urban areas are forced to seek new water sources from greater distances,

which places rural community water supplies at risk.

4. In 2010, municipal water use and crop irrigation constituted the majority of 83% of water use in Texas (27% and 56% respectively).[26] Manufacturing and steam-electric (fossil fuel burning) energy production constituted a combined 14%. By 2060, 38% of the state's total water usage is projected to be used by municipalities and 21% by manufacturing and steam-electric energy industries.

Assets:

1. In 2012, the Texas State Water Board released a State Water Plan that highlighted regional plans for sustaining water resources.[26]
    a. Plan includes investment in desalinization technology (brackish groundwater and seawater), more water recycling programs, and the expansion and preservation of current aquifers.

2. The San Antonio River Authority support Low Impact Development (LID), which is meant to minimize the impact of urban activity on the hydraulic cycle.[31, 32]
    a. This includes promoting permeable surfaces and urban vegetation.

3. SAWS has implemented several water conservation methods aimed at consumers.
    a. SAWS encourages residents to plant water saving plants and offers numerous water conservation tips on its website
    b. SAWS implements a water supply fee assigned to customers based on consumption level. The revenue is used toward developing or securing water sources other than Edwards Aquifer.

4. The city maintains drought stages ranging from 1-4 based on the aquifer water level that institute water use rules in times of drought. These rule restrict car washing and landscape watering, among other things.

Opportunities

1. As water scarcity continues in the San Antonio region, *special attention must be given to ensure low-income communities and communities of color are protected from water shortages and increased utility costs.*

2. In addition to the water supply fee, SAWS should implement a progressive payment plan in which customers pay for water utilities on a per unit basis proportional to household size (number of residents) and use. This plan would encourage conservation.

3. SAWS should reinstate its free high-efficiency toilet program, which would encourage conservation and provide low-income communities with a way to reduce utility costs.

4. *San Antonio should invest heavily in converting urban areas into permeable surfaces, focusing on xeriscaping and encouraging urban vegetation*. These efforts will facilitate consistent groundwater recharging. This is even more important because of infrequent precipitation.
    a. By emphasizing such green renovation in low-income neighborhoods, the city would also assist communities reduce power utility costs.
    b. Vegetation and permeable surfaces facilitate cooler temperatures and reduce the urban heat island effect that requires excessive air conditioner use.
    c. The city should consider offering a program that will pay for such landscaping projects.

5. Additional programs like rainwater harvesting and ecologically progressive development programs to promote water security while protecting environmental health should be encouraged.

6. Water is a basic human right. Use of potable water should be restricted in the cases of industrial and landscaping needs.

7. There must be an effort to address water scarcity in communities that often face environmental injustices and cumulative risks from multiple hazards and inequities. These communities should be given a voice at the table for all ongoing and future water management plans and should be included in any risk assessments and development strategies put forth.

FLOODING

San Antonio's water supply, infrastructure and low-income populations are threatened by ongoing climate changes and increases in the occurrence of flash floods.

Vulnerabilities:

1. San Antonio is located in "Flash Flood Alley". Floods cause damage to homes, businesses and sewers, overloading municipal water systems' abilities to control drinking water pathogens.[33] Frequency and severity of flooding is increasing with climate change.

2. Floods cause significant damage to homes and infrastructure and put public safety at risk.[34]

a. Bexar County sustained $10 million in damages to public property in 2013 as a result of one flooding event.[35]

b. Low-income populations may be most vulnerable to damages and catastrophic ruin when floods hit. These communities are less likely to have insurance, less able to replace damaged items, and may be less able to protect their homes from public health risks from mold.

i. The south side of San Antonio has the highest risk of flooding.[36] The populations living in these neighborhoods are mostly low-income people of color.

3. Due to impervious surfaces, large amounts of rainwater, especially during floods, are not absorbed into aquifers.[37] Increasing floods will not necessarily increase drinking water supplies.
    a. Flooding can overwhelm wastewater treatment plant infrastructure, causing overflows or forcing utility managers to release sewage into the environment untreated.[38, 39]

4. *Infrastructure is often not equipped in low-income neighborhoods to drain floodwaters, creating problems for residents.* Many neighborhoods throughout the city have identified poor drainage infrastructure and vulnerabilities to floods and standing water.
    a. For example, the Kelly/ South San P.U.E.B.L.O. neighborhood, among others, does not have a proper drainage system in place along Quintana Rd between Dunton and Southcross. The community addressed this as a priority for improvement in its 2010 Community Plan Update in collaboration with the San Antonio Planning and Development Services Department.[40] Other San Antonio communities also have development plans.

5. Historic and ongoing industrial pollution of surface waters, often times disproportionately in low-income communities of color, make water unsafe for recreation or cultural use.

Assets:

1. The San Antonio River Authority (SARA) support Low Impact Development (LID), a step to minimize the impact of urban activity on the hydraulic cycle.[41, 42]
    a. SARA works regionally to prevent flood damage and to minimize negative impacts when floods do occur. This includes making changes to infrastructure along rivers and re-designing portions of the city[35] including the Olmos Dam, the River Walk floodgates, and the San Antonio River Tunnel.[43]

b. While these infrastructure developments protect downtown San Antonio, they also contribute to flooding in Southside San Antonio's low-income communities.

Opportunities:

1. San Antonio should give special attention to ensure inner city communities possess effective drainage channels so that these areas are adequately protected from flood risks.

2. The city should also work with urban planners and communities to build sidewalks and curbs in inner city communities where they do no exist. Walking paths are critical during floods and also improve public health on a day-to-day basis due to increased physical activity.

3. Additional programs like rainwater harvesting and ecologically progressive development programs to promote water security while protecting environmental health should be encouraged.

4. Xeriscaping with native plants and permeable surfaces should be incentivized, particularly in the inner city and for low-income communities and communities of color.

EXTREME HEAT

Extreme heat events caused by climate change will have significant adverse health and economic effects on San Antonio's residents. The city's preparation for and reaction to these extreme heat events could exacerbate negative consequences for working class families and communities of color without proper planning.

Vulnerabilities:

1. Extreme heat events, or heat waves, consist of prolonged periods of abnormally hot weather.[44]
    a. Heat waves are more intense in cities because of the Urban Heat Island Effect
    b. Heat waves can harm human health.[45]

2. In 2013, and on average for the past decade, *extreme heat events have been responsible for the highest number of weather-related fatalities in the United States*.[46]
    a. Texas is experiencing hotter weather as climate change progresses.[47]
        i. In 2013, San Antonio had one of its hottest summers on record with 41 days reaching 100 degrees or greater.[48]
        ii. Many of San Antonio's hottest summers took place in the last 15 years.[49]

3. Extreme heat events disproportionately affect the health of elderly and homeless populations, young children, people with chronic diseases, out door workers and people who rely on public transportation.[50] *Low-income populations, people of color, and people living in social isolation are at higher risk for adverse health impacts when extreme heat events hit.*[51, 44]

4. Low-income populations are more likely to have difficulty affording air conditioning or other cooling mechanisms. According to American Community Survey data (2009-2013), 20% of San Antonio residents lived below the federal poverty level compared to 15% nationwide.[52] This rate exceeds 30% in many of the inner city neighborhoods.
    a. In urban environments with minimal tree cover and large areas of impervious surfaces, which can reduce heat wave intensity. These areas have been termed heat risk-related land cover.
    b. Across the United States, people of color are significantly more likely to live in these at-risk areas.[53] Based on 2001 land cover data, non-Hispanic black populations were 52% more likely to live in places at risk to extreme heat events than white non-

Hispanic populations; Hispanic populations were 21% more likely.

i. *In Texas from 2001 to 2009, percent population non-White and percent of impervious surfaces were positively correlated at the census tract level.*[54]

ii. Tree cover percentages were inversely related to percent population non-White, meaning that communities of color had the highest percentages of impervious surfaces and lowest percentages of tree cover, and were most at risk during extreme heat events.

b. San Antonio has recently been identified as one of the most racially and economically segregated cities in the U.S.[55]

5. Air conditioning and central air are used intensely during heat wave and dramatically increase energy use and air pollution.[56]

6. Ground level air pollution, including volatile organic compounds (VOCs) and ozone are more pervasive in during heat waves when plants are less efficient at absorbing pollutants.

a. Low-income communities and communities of color have been demonstrated to be more vulnerable to such pollutants than more affluent, predominantly white non-Hispanic communities. Closer residential proximity to industrial air polluters and other environmental and psychological stressors further adversely impact health.[57]

b. In Houston non-homeowners, African Americans and non-white Hispanics, people with existing health conditions, unemployed individuals and households with incomes less than $20,000 reported a higher incidence of heat-related illness.[60]

Assets:

1. The Alamo Area Council of Government (AACOG) currently offers a *Weatherization Assistance Program for low-income residents to install better insulation, air conditioning, and other weatherizing renovations*. Renters are permitted to apply.[58]

a. In 2014, $1.3 million was invested in the program and 207 homes received assistance. The program is reportedly ongoing.[59]

2. The San Antonio Metropolitan Health District has developed a heat plan with action steps for varying levels of heat risk, which include surveillance of heat-related illnesses among hospital patients, education of San Antonio population for remaining safe in extreme heat

situations, and increasing the availability of cooling centers, extreme heat shelters, swimming pools and other air conditioned public places.

3. The City of San Antonio promotes "Project Cool", which encourages the public to donate fans for senior citizens, particularly during summer months.

4. The System for Integrated Modeling of Metropolitan Extreme Heat RISK (SIMMER), being implemented in Houston and major cities, seeks to identify vulnerable populations based on physical environment and social factors.[60]

Opportunities:

1. *San Antonio must continue working in regional and local partnerships to identify the cities most vulnerable populations.*

2. This should include a close working relationship with low-income community-based organizations in the city that understand the risks faced by their members.

3. Community-based organizations should be included in planning and implementing measures to address risks from extreme heat events.
    a. Together, community organizations and public officials should evaluate and make recommendations on cooling center locations and services.

4. *San Antonio should increase weatherization programs and invest in citywide infrastructure changes to minimize heat impacts.* These should include green roofs, white roofs, transitioning to permeable surfaces, a commitment to xeriscaping, particularly throughout low-income urban areas where residents may have difficulty affording major planting investments.

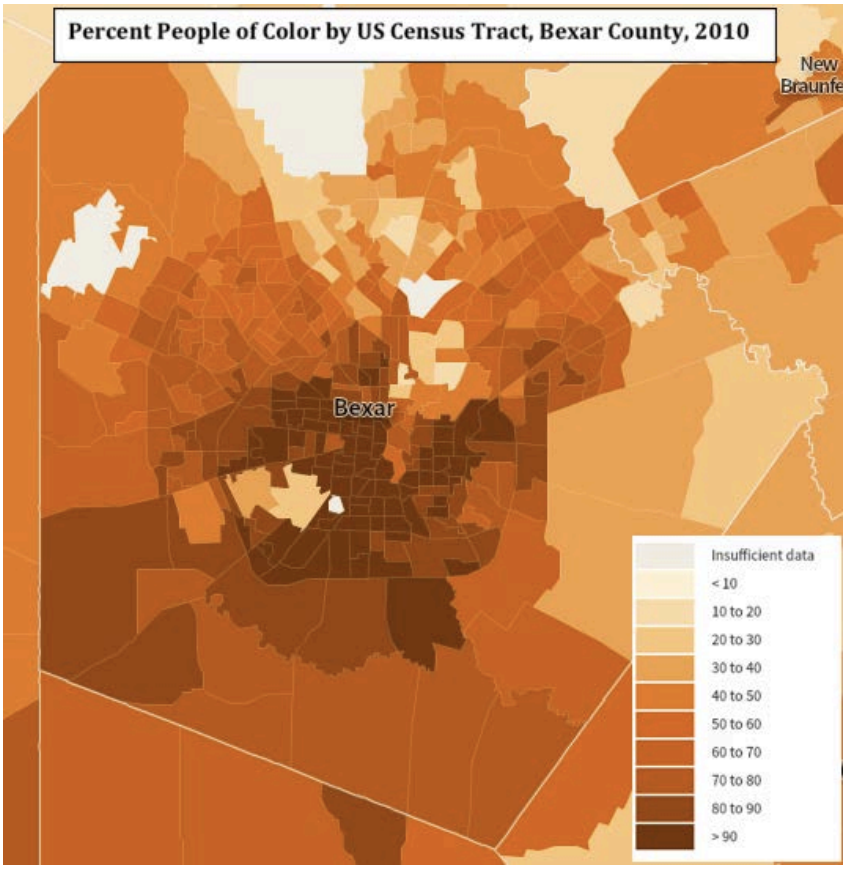
5. Chicago has implemented a green roof on its city hall that reduces its roof temperature by 50% and absorbs rainwater.[50] The city has also introduced permeable pavement in its alleyways that absorbs rainwater and reduces flooding and urban heat.
    a. Other cities including Dallas, TX, Tucson, AZ, and Philadelphia, PA, promote "cool roofs" that include reflective paints and materials and incorporate plants to reduce urban heat, water runoff, building maintenance and utility costs.[50]

6. San Antonio should promote similar initiatives and give special attention to low-income neighborhoods in San

Antonio. Low-income communities would benefit greatly from permeable streets that would reduce flooding, and weatherization programs that would cool homes, reduce electricity costs, and promote public health.

7. The city should offer free public transportation, and cool centers near bus stops during major heat events to facilitate at-risk populations remaining safe.

8. Many of the cooling centers are located in senior centers and community centers, which are underrepresented in low-income communities and communities of color in San Antonio. The south and east sides of San Antonio have many low-income residents, large populations of people of color (Figure 1), and few cooling centers when compared with the rest of the city.[61]



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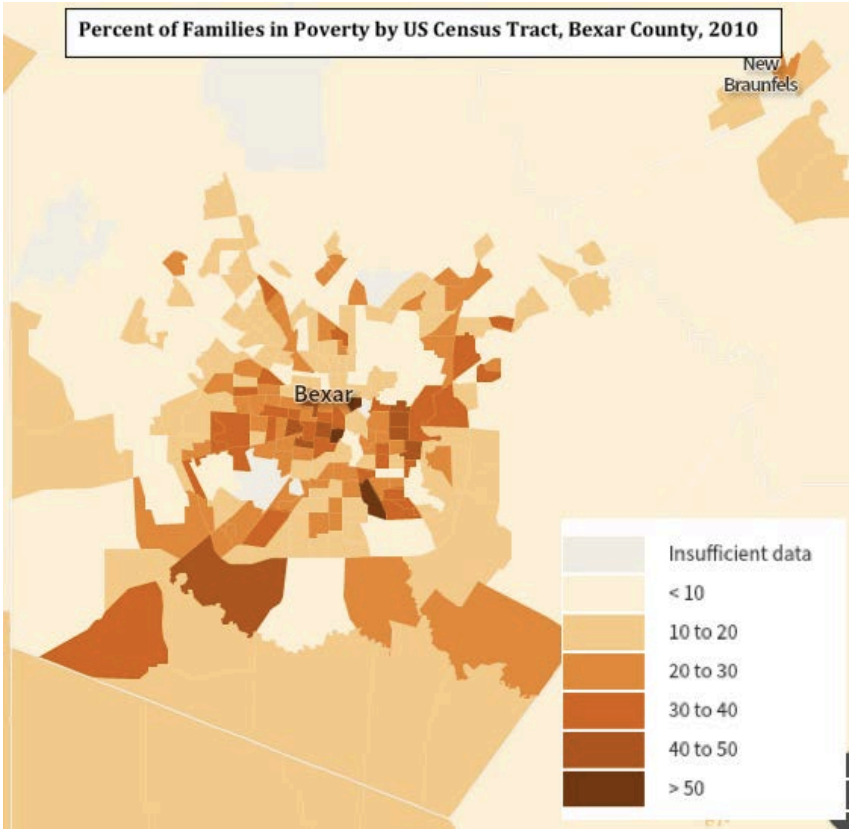

b.

Figure 1: a: Percent people of color by US Census Tract for Bexar County, 2010. b: Percent of families in poverty by US Census Tract for Bexar County, 2010.[62]

INFECTIOUS DISEASE

As climate change progresses the habitats of disease vectors change, San Antonio's population may be exposed to new or greater risks for infectious diseases. People of color and low-income residents may be particular vulnerable due to poor infrastructure and limited access to health care.

Vulnerabilities:

1. *Changing precipitation patterns,* including erratic and unpredictable rainfall, warmer temperatures and increased humidity, *may create favorable habitats for disease-carrying mosquitoes and other disease vectors that may migrate to the San Antonio area.*
    a. Standing water and poor drainage in communities increases breeding grounds for mosquitoes and other vectors.[63]
    b. This is a persistent problem in San Antonio communities on the southwest and southeast neighborhoods.[64]

2. Dengue Fever, a disease transmitted by mosquitoes, is now present in 28 US states.[65] While *Aedes aegypti*, the primary vector for Dengue Fever has long been present in Texas, it is believed that epidemics have remained rare due to the use of air conditioning.[66, 67]
    a. *Dengue Fever may disproportionately affect low-income communities who are less likely to use air conditioning* because of expense and increased utility costs.

3. West Nile Virus, which entered the US in the late 1990s and quickly expanded, is a growing public health risk in Texas as a result of climate change.[65]

4. Lyme Disease, previously thought to not be present in Texas, has recently emerged throughout the state, likely as a result of vector migration changes due to climactic shifts.[68]

5. Leishmaniasis is a disease caused by protozoan parasites characterized by skin ulcers and organ damage, which is also expanding throughout Texas faster as a result of climate change.[69]

6. *Barriers to healthcare for low-income communities and communities of color increases the likelihood of health disparities across racial and class lines*.
    a. In Texas, uninsured populations and populations on Medicaid have limited options for obtaining healthcare. Additionally, low-income

populations often experience chronic health conditions.

b. A 2014 report by the Kaiser Family Foundation found that 74% of individuals on Medicaid in Texas reported an ongoing health conditions compared to 33% of individuals on employer coverage.[70]
c. Texas has the highest percentage of uninsured people in the country.[71]

Assets:

1. While the effects of climate change are difficult to reverse in the short-term, there is a strong body of evidence showing that people can reduce their risks of contracting these vector-borne diseases.[72]

2. Nationwide, however, vector control programs have been defunded and community programs are often severely limited.[73]

3. The Texas Department of State Health Services offers information about these diseases on its website, and various counties provide local level outreach to an extent. Bexar County does not appear to provide significant outreach.

Opportunities:

1. As part of its weatherization program, AACOG should provide assessments for home protection from infectious diseases. This could include providing air conditioners or ensuring homes are properly screened.

2. *Community infrastructure should be improved to limit standing water by introducing permeable pavement, incentivizing the planting of groundcover vegetation with an emphasis on native plants, and correcting poorly designed streets that do not drain properly.*

3. San Antonio should provide educational outreach to the community on preventing exposure to disease-carriers like mosquitoes and ticks.
    a. Ecologically safe methods for controlling vectors should be emphasized.
    b. Educational outreach should also teach individuals the warning signs of such diseases and when to seek medical care.
    c. Special outreach should be provided to low-income populations that are at higher risk of exposure.

WILDFIRES

San Antonio's increasingly dry, arid climate, as a result of climate change, creates favorable conditions for wildfires, which create public safety and economic threats for the city.

Vulnerabilities:

1. Wildfire affects both urban and rural areas; *85% of all wildfires are less than 2 miles from a residential community. Drought and human activities are the biggest contributors to fires.*[74]

2. The Southwest is particularly vulnerable to wildfire because wet winters rapidly produce brush and grass that promptly dry out in the summer, providing significant amount of fuel for fires.[75] This is expected to intensify with worsening climate change.
    a. When fires hit, significant damage and cost follows. In 2011 in Texas, there were 22,000 wildfires fought and over $200 million spent fighting fires. More than 7,000 buildings were lost.

3. Low-income communities are particularly at risk when it comes to wildfires.
    a. Under resourced communities face additional difficulty recovering from fire damage.
    b. Anecdotal evidence suggests that, emergency responders may give preference to wealthier communities during times of disaster or have a slower response in low-income, communities of color.[76,77]

Assets:

1. The San Antonio Fire Department offers daily fire warnings on its website and resources to prevent fires as public services.[78]

2. The City of San Antonio Fire Department Fire Prevention Division offers community inspections and trainings as part of its efforts to reduce area fires.[79]

3. *From 2007 to 2013, there were numerous wildfires clustered in southern San Antonio with other fires interspersed throughout the rest of the city.*[80]
    a. The Wildland-Urban Interface (WUI), which is the intersection of wildlands and human developments, in southern Bexar County, is mostly comprised of pasture and hay.[80] Northern Bexar County has large sections of evergreen forest.
    b. This fact may put the communities in southern San Antonio more at risk of fire damage, particularly as wildfires

become more prevalent with climate change.

Opportunities:

1. Through intentionally planning communities to be fire-resistant, cities are able to better control damage from fires.[74] These are called “fire-adapted communities” (e.g. Austin). Fire-adapted communities include:
    a. Landscape diversity and biological diversity.
        i. Interspersing structures and plant life such that fire can’t spread quickly and cause damage.
        ii. This includes fire-resistant vegetation with high moisture content that do not shed dead plant material.
        iii. The intent is to remove potential fuel for a spreading fire.
    b. Xeriscaping with native plants that are drought hardy.
        i. These plants will retain soil moisture that will slow the spread of fire.

2. The City of San Antonio should provide funding, especially to low-income neighborhoods, to promote xeriscaping and fire-adapted neighborhoods.
    a. Such efforts will serve to reduce potential fire damage, reduce urban heat island effect, reduce energy consumption used in air conditioning, reduce impermeable surfaces, allow for more effective recharge of groundwater, and beautify neighborhoods.

3. The city should also provide educational opportunities for communities to learn about the benefits of such efforts.

4. The city should encourage planning efforts that structure communities in ways that prevent fires spreading.

On a Path Toward Climate Resiliency …

San Antonio is already seeing the effects of climate change. As detailed in this document, the southwestern United States will continue to experience these changes in a multitude of interacting ways that included increased water scarcity, reduced water quality, reduced air quality, and numerous additional public health threats as a result of heat waves, wildfires and new and widespread infectious diseases. We can rise to meet these public health and safety threats and protect all of San Antonio's residents, especially those most vulnerable.

Climate resiliency means being prepared to absorb these major climactic shifts so that our people and our environment do not suffer. However, it does not mean we "batten down the hatches" to wait out the storm. That solution will not work, as there will be no return to normalcy. Climate resiliency means actively changing our society for the better, fixing what has been failing, and moving forward strongly and sustainably into the future.

While there has been an ongoing conversation and an introduction of programs in San Antonio to stem the threats that we face, there has been no lasting and integral focus given to the socio-economic and racial injustices present in San Antonio and the reality that our marginalized communities are currently the least resilient to climate change.

What follows is a recap summary of some of our potential opportunities for protecting San Antonio residents for generations to come.

Air Quality:

- San Antonio's weatherization programs spearheaded by AACOG could be greatly expanded. AACOG should provide additional community educational demonstrations and work with community-based organizations to ensure low-income populations benefit from weatherizing their homes.
- Progressive payment schemes for energy should be incorporated, such as higher rates for greater consumption, to encourage people to conserve energy.
- Improved regulations at drilling sites, more frequency inspections and end of flaring of gas along the Eagle Ford shale will improve regional air quality and decrease health impacts.
- San Antonio should capitalize on the closing of old coal energy facilities by heavily investing in renewable energy sources like solar and wind power.
- San Antonio should complete widespread public education for the importance of vegetation for air quality and reducing energy bills and introduce low-income subsidies for xeriscaping and microclimate air quality management.

Drought:

- As water scarcity continues in the San Antonio region, special attention must be given to ensure low-income communities and communities of color are protected from water shortages and increased utility costs.
- In addition to the water supply fee, SAWS should implement a progressive payment plan in which customers pay for water utilities on a per unit basis proportional to household size (number of residents) and use. This plan would encourage conservation.
- SAWS should reinstate its free high-efficiency toilet program, which would encourage conservation and provide low-income communities with a way to reduce utility costs.
- San Antonio should invest heavily in converting urban areas into permeable surfaces, focusing on xeriscaping and encouraging urban vegetation. The city should consider offering a program that will pay for such landscaping projects.
- There must be an effort to address water scarcity in communities that often face environmental injustices and cumulative risks from multiple hazards and inequities. These communities should be

given a voice at the table for all ongoing and future water management plans and should be included in any risk assessments and development strategies put forth.

- Additional programs like rainwater harvesting and ecologically progressive development programs to promote water security while protecting environmental health should be encouraged.

Flooding:

- San Antonio should give special attention to ensure inner city communities possess effective drainage channels so that these areas are adequately protected from flood risks.
- The city should also work with urban planners and communities to build sidewalks and curbs in inner city communities where they do no exist.
- Additional programs like rainwater harvesting and ecologically progressive development programs to promote water security while protecting environmental health should be encouraged.
- Xeriscaping with native plants and permeable surfaces should be incentivized, particularly in the inner city and for low-income communities and communities of color.

Extreme Heat:

- San Antonio must continue working in regional and local partnerships to identify the cities most vulnerable populations.
- San Antonio should increase weatherization programs and invest in citywide infrastructure changes to minimize heat impacts. These should include green roofs, white roofs, transitioning to permeable surfaces, a commitment to xeriscaping, particularly throughout low-income urban areas where residents may have difficulty affording major planting investments. San Antonio should promote these initiatives and give special attention to low-income neighborhoods in San Antonio.
- The city should offer free public transportation, and cool centers near bus stops during major heat events to facilitate at-risk populations remaining safe.

Infectious Disease:

- As part of its weatherization program, AACOG should provide assessments for home protection from infectious diseases. This could include providing air conditioners or ensuring homes are properly screened.
- Community infrastructure should be improved to limit standing water by introducing permeable pavement, incentivizing the planting of groundcover vegetation with an emphasis on native plants, and correcting poorly designed streets that do not drain properly.
- San Antonio should provide educational outreach to the community on preventing exposure to disease-carriers like mosquitoes and ticks emphasizing ecologically safe methods for controlling vectors.

    - Special outreach should be provided to low-income populations that are at higher risk of exposure.

Wildfire:

- Through intentionally planning communities to be fire-resistant, cities are able to better control damage from fires. So called "fire-adapted communities" include:
    - Landscape diversity and biological diversity.
    - Xeriscaping with native plants that are drought hardy.
        - These plants will retain soil moisture that will slow the spread of fire.
- The City of San Antonio should provide funding, especially to low-income neighborhoods, to promote xeriscaping and fire-adapted neighborhoods.
- The city should also provide educational opportunities for communities to learn about the benefits of such efforts.
- The city should encourage planning efforts that structure communities in ways that prevent fires spreading.

We look forward to capitalizing on these opportunities, working together, and moving forward into a sustainable and just environmental and social climate for everyone in San Antonio.

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