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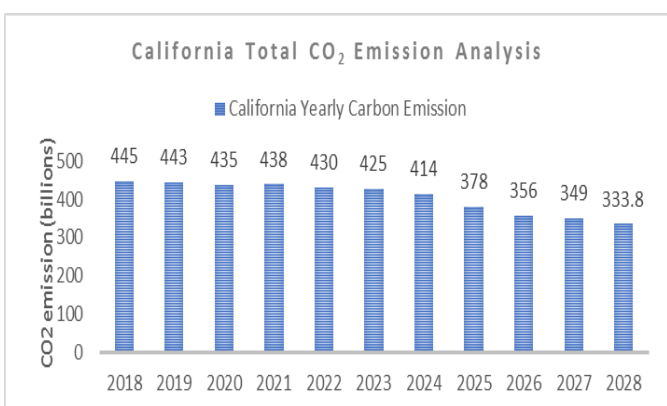
National Strategy to Combat Wildland Fires: A Public Policy

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Graphical Abstract	Abstract.

Graphical Abstract

California Total CO_2 Emission Analysis

■ California Yearly Carbon Emission

CO2 emission (billions)

500 / 400 / 300 / 200 / 100 / 0

445 443 435 438 430 425 414 378 356 349 333.8

2018 2019 2020 2021 2022 2023 2024 2025 2026 2027 2028

Abstract.

Wildfires are a natural phenomenon in the environment, which allow certain species of plants and trees to germinate (NPS, n.d.). However, in the last decade, the behavior of wildfires has drastically become more deadly and intense because of greenhouse gas emission and anthropogenic activity (Abatzoglou & Williams, 2016). Climate change has extended the fire season and has encouraged winds to spread across land rapidly, making it almost impossible to suppress flames (Forest Services, 2015). As the wildfire intensity increases, the elderly are primary victims, and the hardest to locate because of lack of transportation and wildfire preparedness (Cahalan & Renne, 2007). This issue gains prevalence as baby boomers begin to age and retire at home alone (AARP, n.d.). Nationally, there is also a shortage of trained firefighters to combat the growing strength of flames, adding to the difficulty in fire suppression (NFPA, 2015). The first step in fighting the growing intensity and damage related to wildfires is to initiate a national carbon tax to encourage green energy investment, and which revenue would be used to fund a National Elderly and Disabled evacuation plan for the most at-risk populations.

Additionally, allowing an inmate rehabilitation program will provide an employment of an additional 8,000 non-violent inmate firefighters, which will drastically help the national firefighter shortage, while also reducing recidivism. As the United States prepares to exit from the Paris Agreement, it is imperative that states, and Congress take initiative to regulate the scaling contributions of fossil fuel emission in order to control the rising danger of wildland forest fires.

Introduction

Tree scars show that wildfires have been ravishing through forests for hundreds of years, and are crucial for stability of certain ecosystems. For example, up to 33 natural plants of the Everglades National Park depend on fire for their long-term survival, and in California the ceanothus, a plant with leaves coated in flammable resin, also depends on heat to sprout (NPS, n.d.). In a measured setting, a prescribed fire or planned fire, can manage potential fuel hazards, while allowing these plants to germinate (NPS, n.d.). Prescribed fires permit firefighters and forest rangers to manage the intensity of a future wildfire and create a balanced environment between ecosystems that require heat to survive. During the wildfire season, these leaves and other parts of the plant act as a source of energy for the fire, and can create the perfect scenario for an uncontrollable, extreme wildfire.

As many as 90% of wildland fires in the United States are caused by human activity including, burning of debris, negligent discard of flammable material, or arson (NPS, n.d.). The remaining 10% can be attributed to natural occurrences such as lightning strikes and controlled fires (NPS, n.d., para. 5). Occurrence of wildfires in the past few decades have decreased, but damage and acreage impacted by the intensity of the fires has grown (Urban Institute, 2016, pg. 4). Incidence control can be attributed to education on fire safety and management strategies that have been in practice over the past few years. However, changes in the climate have altered the length of fire season, frequency of fires, and intensity of flames by means of high temperatures and droughts (EPA, n.d., para.1). The change in behavior of wildfires requires an updated and efficient policy change to fire management, evacuation plans, and fire team strategies to combat the rise in suppression costs, structural damage, and injuries sustained during extreme fires.

On October 8, 2017, a wildland fire began in California and would become one of the most damaging and deadliest wildfires in US history (Park, 2017). The fires burned more than 220,000 acres through California's Sonoma and Napa counties leaving over 5,000 structures destroyed, and 36 people dead (Park, 2017). Primary victims of this tragedy included the elderly and disabled. Survivors of the fire described being caught off guard by how quickly the flames spread through their area, leaving them with little time to evacuate. The smoke from the intensity of the fires spread throughout San Francisco and hazardous particle matter was detected in southern states such as Texas and Oklahoma (Airnow, 2017). Effects of the wildfire lasted for weeks, while the emotional, structural, and financial damage will last for years.

The National Weather Service provides fire conditions to compromised zones over a 12-72-hour period (FEMA, 2014). Some areas estimate fire danger and need for evacuation by standard of The National Fire Danger Rating System, with levels starting at low, ranging to moderate, high, very high, and extreme (USDA, n.d.). It is encouraged for families to have communicated plans for evacuation, with valuables, important documents, and prescriptions ready in case of the need to leave (FEMA, 2014, pg.7) Hospitals are also required to have an evacuation plan for admitted patients, including transfers to other hospitals or relocation to a safe shelter (CHA, n.d.) Training for medical

professionals are provided by the Emergency Preparedness Program for hospitals located in California (CHA, n.d.). This program provides medical training in all areas of evacuation, but is not responsible for ensuring safe arrival of patients that are in the care of evacuating hospitals. It is ultimately the hospitals responsibility to ensure safety of patients in their care. Disabled and elderly patients living in private homes are also responsible for ensuring their own security in the need of an evacuation. Many of these patients may require transportation services if they are bound to a wheelchair or a bed. Given the standards through the National Weather Service, they would have to ensure their evacuation plans are set 72-hours in advance.

Like most cases of natural disasters, the elderly and disabled are the hardest to locate and assist at the time of evacuations (Cahalan & Renne, 2007). Evacuation plans encouraged by organizations such as FEMA, include methods that may only be optional to a family with a car and complete independence, and do not consider the safety of those that may be blind, deaf, or mentally incapacitated. For example, fatalities resulting from Hurricane Katrina in 2005, were mainly elderly with 71% of victims over the age of 60, and 47% over the age of 75, statistics show that there is no plan to aid the most vulnerable among the population (Cahalan & Renne, 2007). Unlike hurricanes, evacuation for wildfires is mandatory where flames are predicted to spread, because of heavy smoke that can cause respiratory distress and high temperature potential. Increase in the aging population has caused this issue to gain urgency in rural areas of California, but has not caught attention in Washington, where a national policy could be regulated (Romney, 2015).

Furthermore, wildfires can be suppressed by removing either oxygen (O_2), fuel, or fire (National Park Service, n.d.). Supplies to reduce fire intensity include airborne planes, water, and fire retardants. Current fire retardants contain 85% water, 10% fertilizer, and the last 5% are small ingredients including colorant, and corrosion inhibitors (USDA, n.d.). Together, they aid to reduce fires, and their effects continue for over a week. Although firefighters work well into the night combating severe flames, natural factors play a significant role in the speed and area a wildfire will impact. Rising temperatures in the spring and summer in more recent decades have caused drought for longer periods of the year (Union of concerned scientists, n.d.). These circumstances result in an extended fire season, with more intense and longer burning in prone fire areas (Union of concerned scientists, n.d.). Weather conditions during the week of October 8, 2017 in California included gusty winds of up to 70 mph and low humidity, making it hard for firefighters to combat the spreading flames, a small sample of the potential hazards for the 2017-2018 fire season.

Fires also exhibit strong emissions that influence the atmospheric conditions. For instance, fires emit large quantities of carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), combine an estimated total of 3% contribution of greenhouse gas emissions annually (Forest foundation, n.d.). The carbon emitted in the extreme temperatures last decades in plants and air quality can take weeks to reach safe levels (Forest foundation, n.d.). It is a vicious cycle, fuel aridity by anthropogenic activity has increased the strength of wildland fires, which causes longer burning and release of hazardous, damaging greenhouse gases (Abatzoglou & Williams, 2016). Research shows that as the effects of climate change remain, drier and warmer weather patterns will continue to have influence on the fire season length and affinity for potentially dangerous and extreme fire conditions (Union of concerned scientists, n.d.).

In addition, firefighters risk their lives to ensure wildland fires are suppressed before they reach human populated areas (NPS, n.d.). They venture into extreme conditions that can have impact on their physical or mental health and safety. As of 2015, of the 1,160,000 local firefighters in the United States, only 30% were career firefighters while the remaining 70% were volunteer firefighters (NFPA, 2015). In early 2017, the National Field Protection Association released a report that detailed preparedness and readiness capabilities of firefighters and facilities throughout the United States (Haynes & Madsen, 2017). The results showed that career firefighters receive wildland fire training more often than volunteer firefighters, and found fitness levels required to deal with wildland fires are not adequate to handle the severe conditions associated with wildfires (Haynes & Madsen, 2017).

Although there is a lack of training for extreme wildfires conditions in some areas across the US, 41.8% of volunteer firefighters have over 10 years of experience fighting fires and help states save millions of dollars in payroll each year (NFPA, 2015). With an increase in retiring firefighters, Forest Services does not have a plan to fulfill positions such as incident commanders and logistics section

chiefs, roles that are meant for firefighters (USDA, 2010). Without a plan created to combat shortages in firefighters, it will be difficult to combat the growing risks of wildland fires (USDA, 2010). To help address this issue, California has implemented one of the largest inmate firefighter programs in the nation with over 4,000 female, non-violent inmates being trained as volunteer firefighters (Geiling, 2015). These women, much like career firefighters, put their lives at risk to ensure the safety of others during the suppression of difficult wildland fires.

Not only do these non-violent inmates help with the shortage of volunteer firefighters, but they also save tax-payers close to 80 million dollars a year (Geiling, 2015). Career firefighters costs the state of California millions of dollars, and places additional financial burden on departments such as Forest Services to appropriate funds (Geiling, 2015). These inmate programs enable California to combat their own firefighter shortage at a lower cost, while also creating recreational and rehabilitation opportunities for non-violent inmates.

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Materials and Methods

While the danger and strength of wildland fires increase, the elderly and disabled continue to be the primary victims, there is continuous emittance of carbon from large factories that has extended the fire season, and there is a shortage of firefighters to combat the wildland fires. To address and resolve these underlying issues, a national strategy must be created to impede the threat fire has created to the population and environment.

Evacuation act

To begin, the priority in dealing with the growing danger of wildland fires is to develop an evacuation plan for the high-risk populations. Currently, there is no national strategy that monitors the safety of the elderly and disabled during any natural disaster, let alone a wildfire. There are national databases that monitor criminal offenders, but not the well-being of vulnerable citizens during emergencies. Therefore, the federal government should consider crafting a national database of elderly and disabled in every state, regulated by local Disaster Recovery Centers of FEMA. The suggested National Evacuation for the Elderly and Disabled Act (NEED), would ensure that every elderly and disabled person in each county or town has a way to evacuate during emergencies. Evacuating requires transportation and finding safe shelter. This proposed plan would ensure the outcomes of both requirements for those who are not able to make plans accordingly.

This issue is prevalent as the baby boomers are retiring in large numbers (AARP, n.d.). By 2020, 55 million Americans will be over the age of 65 and by 2030, 20% of Americans will be 65 and older (AARP, n.d.). This generation has also been the highest to decide to "age in place", with 85% of 65 and older admitting they do not want to enter a nursing home, but rather live out their lives in their own homes (AARP, n.d.). Many of these persons do not have caretakers, and an average of 50% of drivers over the age of 65 do not leave the house on a regular basis because of lack of transportation (AARP, n.d.). These individuals become vulnerable in the event of a wildfire, with many older citizens forgetting to evacuate because of Alzheimer's or dementia, not hearing local calls to evacuate, or not finding transportation to leave the area at all (Romney, 2015)

FEMAs mission is to prepare, protect, and respond to citizens impacted by hazardous conditions across the country (FEMA, n.d.). The NEED act would require FEMA to concentrate on organizing local call centers that regulate the well-being of the older, and disabled populations before impact of a natural disaster. Call centers would be required to hire personnel from the beginning to the end of every fire season to ensure organization and reliability. These employees would be trained much like local 911 responders, instead their responsibilities would entail making welfare calls to local citizens who may be in heavy ash areas and suffering from respiratory distress, or setting up transportation for a person that is required to evacuate. States and local government would also be required to initiate contracts with local non-ambulatory transportation services during this time to ensure there are ample vehicles to accommodate patients who may be bed ridden or physically incapacitated.

This is going to require a community effort. Local government officials would begin by forming a list of their local elderly, and disabled that live at home alone and might need assistance in

the event of an emergency. It would be the states responsibility to ensure funding and lawful compliance of the act, but incumbent upon the local government and FEMA recovery centers to guide training and communication between NEED call operators and transportation services to ensure the persons are brought to a safe location during evacuations.

Extended fire season

Saving human life is the priority when dealing with a wildland fire, but the ultimate goal should be to ensure a safe, stable environment to avoid these issues. The correlation between growing danger of wildland fires and anthropogenic activity is relevant and must be tackled (Abatzoglou & Williams, 2016). A carbon tax would hold corporations and the general population accountable for pollution they contribute to the environment and encourage everyone to invest in cleaner energy sources (Carbon Tax Center, 2016). Denmark, Norway, and Sweden have all participated in some form of carbon tax since the nineties, with Denmark seeing a 15% decrease of emissions between 1991-2005 (Nunez, 2016). Not only has it shown to decrease the emission of carbon, but can also generate revenue that can be used to invest in cleaner energy resources or tax rebates for citizens who invest in going green. Carbon emissions in the United States was estimated to be 5 billion metric tons in 2016 (Carbon Tax Center, 2016). Current global carbon tax range between $2-$168 per metric ton emitted (Nunez, 2016). Charging $60 per metric ton could generate the United States $300 billion dollars a year.

According to a study conducted by the National Surveys on Energy and Environment (2014), 56% of Americans are in favor of a carbon tax if it meant they would receive a rebate, and 60% would support the carbon tax if revenue accrued would be used to invest in renewable energy programs. With the amount of revenue accrued by the tax, Congress would be able to invest in both rebates and development of research into renewable energy. Carbon emission lasts in the environment for years, and this carbon tax is the only way to ensure reduction of emission, while persuading citizens and corporations into a cleaner energy lifestyle.

Shortage of assistance

As mentioned previously, to put out a wildland fire, oxygen, or fuel must be removed, but this action also requires firefighters who are willing and trained to combat intense flames. The shortage of trained firefighters is the most important issue facing firehouses across the United States (NFPA, 2015). California's state run Cal Fire program is one of the first to take initiative by training over 4,000 non-violent inmates as wildland firefighters (Geiling, 2015). Inmates who fit the criteria include those who have never been convicted arsonists, violent offenders, or life sentence holders (Geiling, 2015). Traditionally, inmates are taken from state prisons to join these programs, but statistics show that there are not enough inmates who meet the standards (Geiling, 2015). An alternative to this solution would be to train inmates being held at county jails (Geiling, 2015). Although inmates in county jails generally do not have long criminal sentences, this action could possibility open the door for an inmate fire rehabilitation program. With a firefighter rehabilitation program, held county or state inmates would be trained and work as firefighters while detained, but have the option to seek employment during peak wildfire season, on the contingence of good behavior after being released.

This rehabilitation program would monitor conduct of employees during their first 5 years of employment to ensure they are not engaging in criminal activity while a seasonal firefighter. Providing incentives like educational or vocational programs for prisoners has been shown to reduce recidivism (The National Reentry Resource Center, 2014). A national implementation of a natural disaster rehabilitation prison program would ensure adequate staffing to work before and after an emergency. This would also encourage responsibility, moral, and confidence in previous offenders, while hopefully diminishing their desire to commit crime.
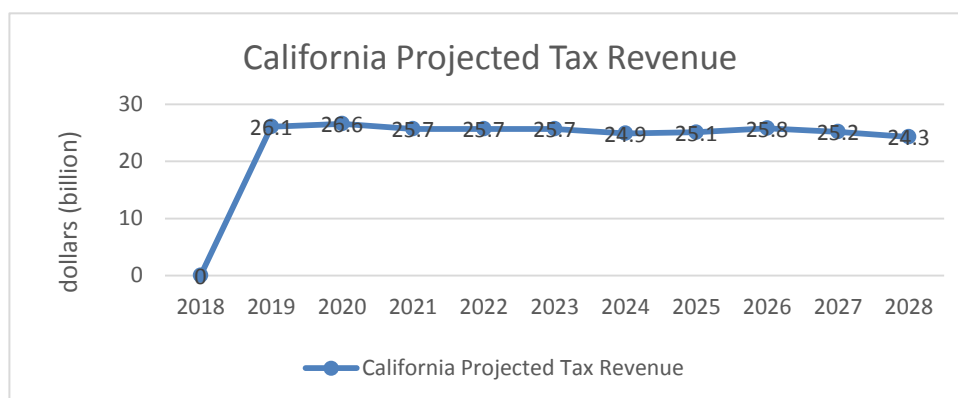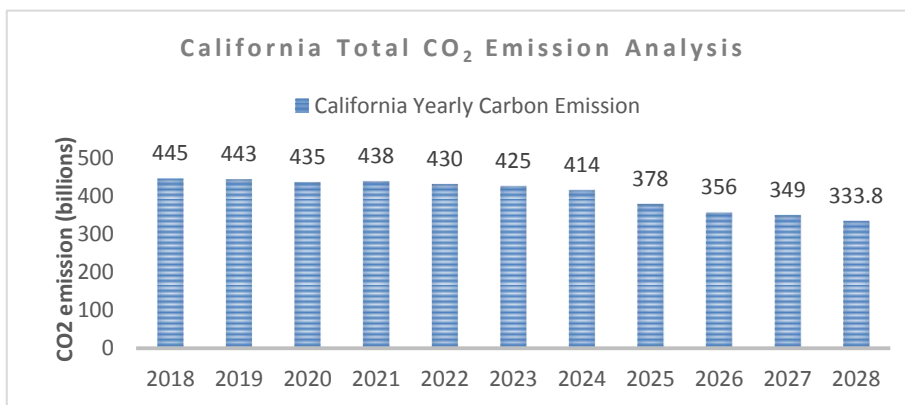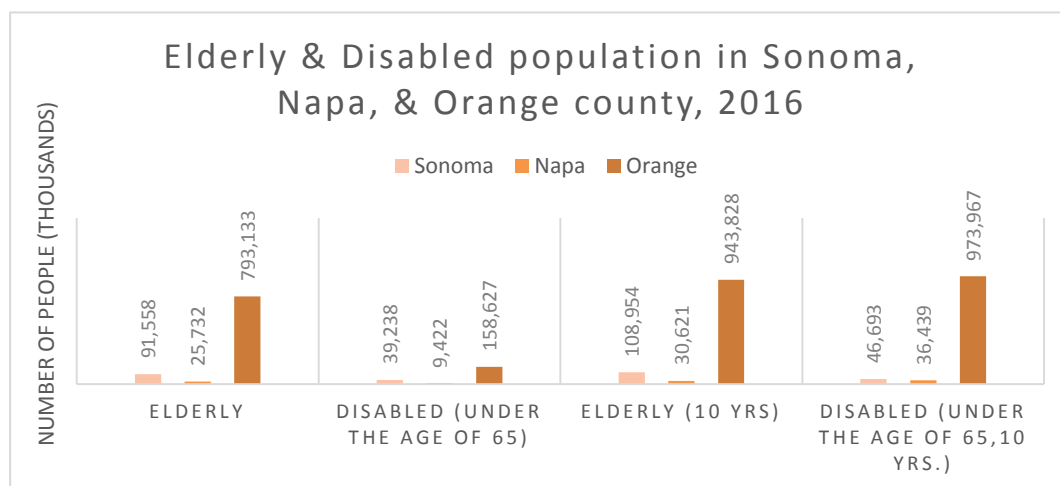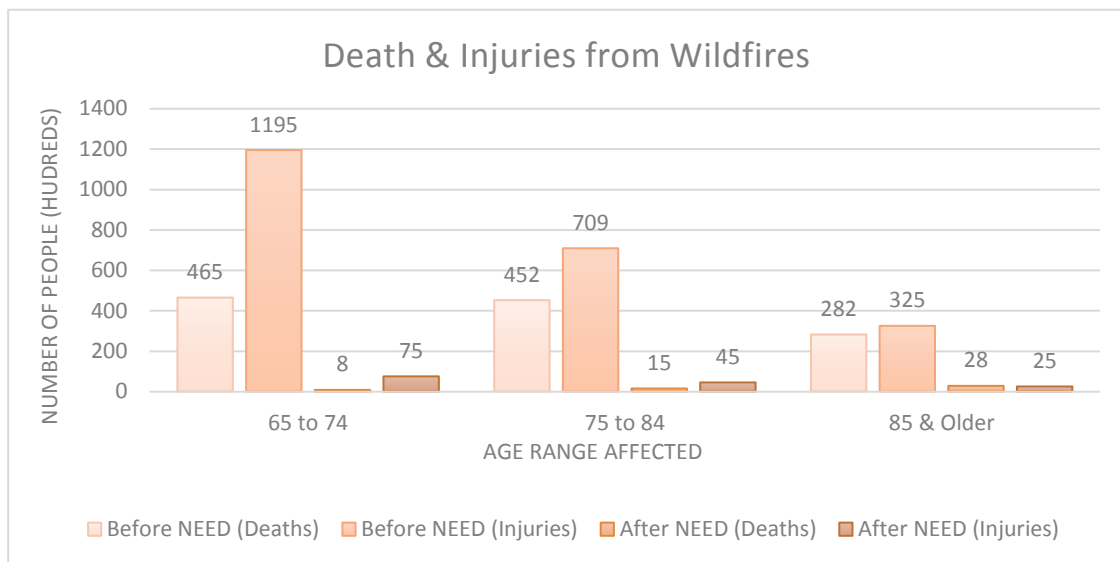
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Results and Discussion

	Prior to Tax Bill	After Tax Bill	
FEMA Annual Budget		*Baseline: budgeted annually* *$2-3 billion dollars*	*FEMA will receive 10% contribution from every state CO_2 tax revenue*
CO_2 Tax Bill (National)		*No current CO_2 tax in effect*	*$300 billion-dollar revenue with a $60 per carbon emission with a 5 billion metric emission yearly*
CO2 Tax Bill (California Perspective)		*Current Revenue ($0)*	*$26.4 billion- based on California's CO_2 yearly emission of 440.4 million metric units (at $60 per unit)*
National Evacuation for the Elderly & Disabled (California)		*Current budget ($0)*	*$1.14 billion annually*
Inmate Rehabilitation Program (California)		*$53 billion with 8,000 career firefighters*	*$560,750 annually with 8,000 inmate firefighters*
Additional Expenses		*$1.3 billion- Current average Forest Services fire suppression costs*	*Fire suppression, provided by FEMA funding*
Total Projected Costs		*$56.3-$57.3 billion*	*$24.5 billion revenue California*

Each year, the federal government appropriates costs related to natural disasters and wildfires, varying between $2 billion to $6 billion dollars (Lindsay, 2014). The Robert T. Stafford Emergency Relief and Disaster Assistance Act permits the President to declare disasters ranging from destructive to minimal, which then allows Congress to provide additional funding to FEMA if needed (Lindsay, 2014). In the past, fires could be suppressed through local efforts alone and did not fit FEMAs criteria as a major disaster (Stapf, 2017). However, changes in the climate have forced the federal government to assist in relief efforts by providing additional out of state firefighters and financial assistance to citizens who are affected (Stapf, 2017). FEMA relief programs, such as the Fire Management Assistance Grant Program (FMAGP), allow cost sharing between the federal government and states, but National Forest Services are primarily responsible for suppression costs associated with wildland fires (Geiling, 2016). On average, Forest Services spends $1.3 billion dollars annually to fight forest fires, almost 30% of their annual budget (Vilsak, 2015). In 2017, costs have reached over 2.4 billion, with roughly $577 million being taken from non-suppression programs to fund suppression costs, forcing reduction in funding for other forest management programs (USDA, 2017). These suppression expenses do not include crop and infrastructure damage, evacuation, or emergency response that is required during a wildfire. Presently, there is no structured tax revenue that is solely designated to FEMA or fire disaster relief at a time when it is needed most.

Evidence concludes that human activity has contributed greatly to the behavior of natural disasters, and there must be a plan to combat natures response (Abatzoglou & Williams, 2016). The proposed national CO_2 Emission Overhaul (CO_2EO) will allow funding for disaster relief from revenue accrued by each state. For example, California's yearly carbon emission is estimated upwards of 440.4 million metric tons (CA Air Resource Board, 2017). The current desired tax rate through the proposed national bill is $60 per metric unit. This would create close to $26.1 million in revenue for California alone. With this bill, each state would be required to contribute 10% of total carbon tax revenue to FEMA (A total of $2.4 billion annually, based on current CO_2 emission for California), in which FEMA will use each year to pay for costs associated with natural disasters and wildfires. Governors in each state, and FEMAs Regional Director would meet yearly to discuss appropriate distribution of funds accrued. This could include funding for infrastructure repair, firefighter programs, and the earlier proposed NEED program for the elderly and disabled.

After their yearly contribution to the FEMA Disaster Relief Fund, the state would be required to use a portion of funds to invest in clean energy research and tax rebates for citizens to personally invest in cleaner resources. Tax rebates for citizens will range between $100 and $2500 and will be contingent upon the category of green energy investment: i.e., solar roofs, electric cars, and lower energy appliances. Clean energy research investment would be determined by each state, but would have to be formally presented to the EPA on a yearly basis. Figure 1 depicts projections for total carbon emission before and after the implementation of the CO_2 Emission Overhaul for California. Carbon reduction in countries such as Sweden have averaged a 20% reduction over an 8-year span with US $23 per metric ton carbon tax (Nunez, 2016). With a higher tax rate to discourage fossil fuel usage, additional funding geared towards cleaner energy research and rebates, which encourage citizen investment in greener sources: the current proposed CO_2EO act would allow an estimated 25% overall reduction in carbon emission over a 10-year span. Figure 2 represents revenue accrued through the CO_2EO tax plan, creating between $24 and $26 billion dollars for California, at $60 per metric unit over 10 years.

Death & Injuries from Wildfires

Elderly & Disabled population in Sonoma, Napa, & Orange county, 2016

 Revenue provided to the Disaster Relief Fund would also be used to begin the process of funding for the National Elderly and Disabled Act in California. Initial costs associated with the NEED act include: $450 million for staffing and training, $500 million for equipment and disaster vehicles, $39 million for food and relief items, and $25 million for shelter and relocation services, bringing the total to $1.14 billion dollars annually. Figure 4a represents the 2016 elderly and disabled population at risk in Sonoma, Napa, and Orange County, California, with a 10-year, 19% predicted population growth (US Census Bureau, 2016). Figure 4b exemplifies the number of elderly and disabled deaths attributed to wildfires, and the projected outcome the NEED program will produce once implemented.
Lastly, the inmate rehabilitation program will be used to combat the declining number of trained wildland firefighters without creating extensive costs for the state of California. Currently, Cal Fire employs 10,000 firefighters, 4,000 of which are a part of the Conservation Camp Program (Geiling, 2015). With the inmate rehabilitation program proposed, an additional 8,000 non-violent inmate firefighters will be trained with the potential to receive seasonal employment on the contingence of good behavior.
 This proposed plan will allow an additional 6,000 working hours for inmates at a pay rate of $2 per hour while detained, with opportunity to make $9 an hour as a seasonal firefighter through the inmate rehabilitation program, an estimated total of $560,750 annually. In California, a stage II firefighter

averages a monthly total of $6,655 and would cost the state over $52 million dollars (CDHR, 2014). An added workforce of inmate firefighters will combat the shortage of available workers, while also reducing recidivism. Figure 5 depicts the outcome of re-arrests after the implementation of the inmate rehabilitation program over a 5-year period. On average, state invested inmate programs reduce criminal re-offenses by 3% per inmate population (The National Reentry Resource Center, 2014).
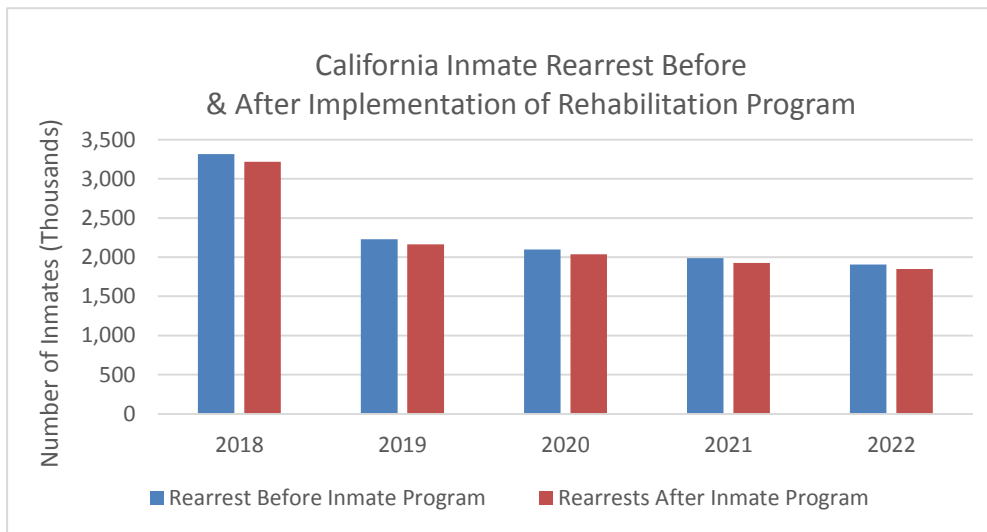
Conclusions

On December 12, 2015, 196 countries including the US, gathered together in Paris, France to collectively agree to invest in greener energy sources, thereby reducing greenhouse gas emission around the world (Domonoske, 2017). It is a promise to accept responsibility by encouraging education, and investment in greener resources. The Paris Agreement aims to retain the era's rise in global temperature below 2° Celsius, with intent to further decrease to 1.5°Celsius (UNFCC, n.d.). It involves financing developing countries by $100 billion annually to initiate the shift from fossil fuel to greener energy sources and transparency to ensure all parties are putting forth their maximum effort (UNFCC, n.d.). But, in June 2017 newly elected President Trump announced the United States exit from the agreement out of the belief the pact is solely redistribution of our nation's wealth, a bad deal created to take advantage of the US (Office of the Press Secretary, 2017). Although parties to the contract are not able to forego responsibility until 2020, the Presidents disregard for the substance behind the agreement set a tone for the United States role in the future of green energy (UNFCC, n.d.).

More recently, the new EPA director Scott Pruitt proposed the repeal of The Clean Power Plan, an established set of guidelines that regulate and limit states CO_2 emission (EPA, 2017). Instead, embracing an executive order by the President which cuts regulations that are considered a burden to the use and development of domestically produced energy sources (EPA, 2017). Not to mention, oil and gas companies donated over $103,491,914 to both Democrat and Republicans (85% of contributions went to Republicans) for the recent 2016 elections and spent close to $94 million last year to lobby clean energy research efforts (Center of Responsive Politics, n.d.). The future of green energy has been corrupted and Congress must once again gain insight. It is imperative to embrace checks and balances to ensure the United States is at the forefront of the world's efforts to reduce carbon emission, while also putting the future of humanity before the oil industry. According to the EIA (2017), current crude oil supply will only last until 2050, estimated by current human demand. By then, cities across the coastal shorelines of the United States will be submerged underwater, uprooting millions of Americans and sinking an estimated $66 to $106 billion worth of property (Carlowicz, 2015).

It is not too late to take control of the impact humans have had on the environment with nonrenewable sources. States, and Congress must work together to create a platform that reinforces the United States' position on a cleaner environment without the President, or outside influence from large corporations. The first step is to initiate a carbon tax at $60 per metric ton, which will generate $300 billion dollars for the US, based on current fossil fuel emission. Using this revenue, a yearly

contribution of 40% will be taken by states, and given to the National Renewable Energy Laboratory to advance green energy research. A tax rebate for citizens who personally invest in cleaner energy will encourage greener lifestyles for local populations, while also reducing personal impact on the environment. The remaining revenue generated will be used to invest in FEMAs disaster relief programs to ensure the most vulnerable victims of natural disasters are brought to safety, and provides funding for trained inmate firefighters to combat the national shortage.

As previously stated, the population most affected by wildfires are the elderly. Due to lack of transportation, they are unable to evacuate and predominately the group that becomes victim to flames, and the poor air conditions that arise. The proposed NEED act will ensure planned evacuations and relocation for the most vulnerable in the event of an evacuation. By 2050, over 85 million baby boomers will be 65 and older, many of whom will be living independently and are unable to drive (Ortman, Velkoff, & Hogan, 2014) A national evacuation policy, funded by a mere 2% of revenue accrued through the proposed tax plan will ensure precedence for the growing number of retired, hard-working men and women of the country.

Lastly, a changing climate has also altered the ability to provide healthcare to the public. During the Northern California wildfires, which recently took place in October 2017, two large California hospitals were forced to evacuate over 200 patients by the nurses, and medical staff who bore responsibility for their care (Nedelman, 2017). This number did not include the influx of patients at non-evacuated hospitals who suffered from burns ranging from minor to severe, smoke inhalation, and shortness of breath (Nedelman, 2017). WHO estimates an additional 250,000 deaths per year related to malnutrition, and spread of water-borne pathogens caused by the change in the environment through the years 2030 and 2050 (WHO, 2017). This will also trigger a need for public health nurses to educate and assist the most vulnerable populations. A nurse's Nightingale Pledge promises devotion for the welfare of patients in need of care, and nurses have continuously shown support not only during wildfires, but all natural disasters (The truth about nursing, n.d.). As leaders of the free world, the United States should adapt the same vow: to not only uphold the Constitution, but to also ensure the protection and stability of the environment, a crucial feature to the welfare and survival of all humanity, and an important feature to control the growing frequency of wildfires.

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