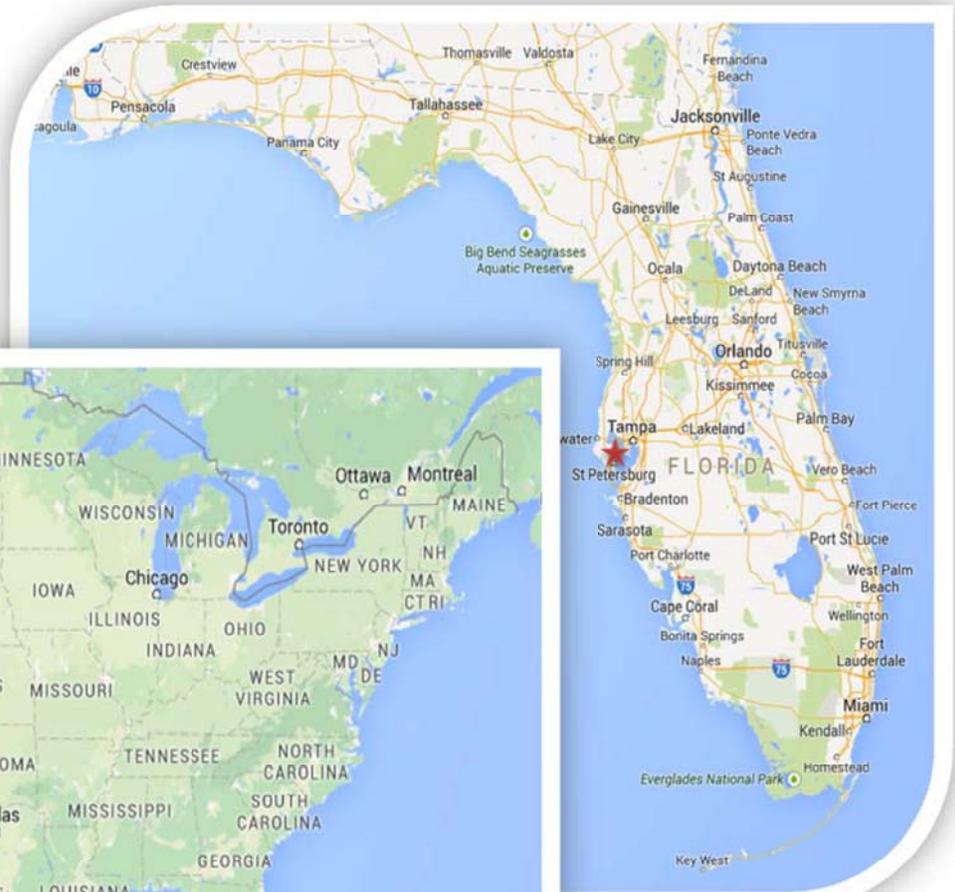


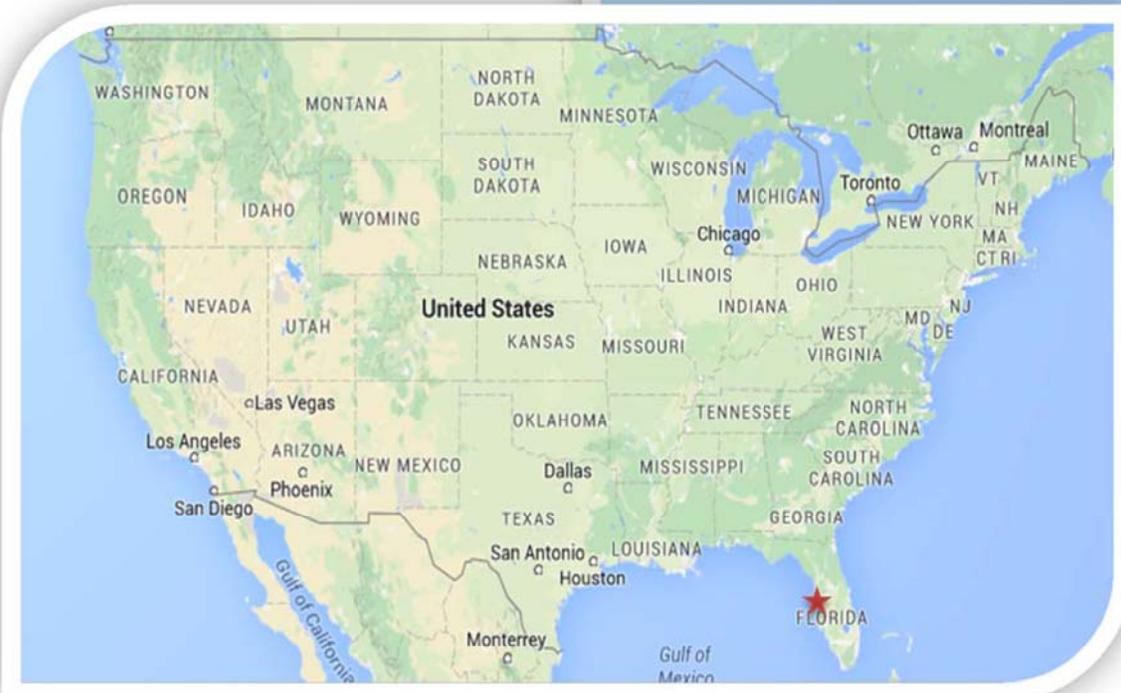
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St. Petersburg City Snapshot

University of South Florida, Patel College of Global Sustainability



Florida (Google, INEGI, 2015)



United States of America (Google, INEGI, 2015)

PDF markups are sent to each individual student, this page pulling out the comments provided in this assignment has been created only for the TA Awards process.

St. Petersburg, Florida

St. Petersburg, also known as "the Sunshine City," is located on the Southwestern Gulf Coast of the state of Florida. Living up to its namesake, the sun shines on St. Petersburg nearly every day with the number of sunny days averaging around 361 (City of St. Petersburg, 2014a). To complement this sunshine, St. Petersburg is surrounded almost entirely by water, 244 miles to be exact, including the Gulf of Mexico, Tampa Bay, and Boca Ciega Bay (City of St. Petersburg, 2014a). The average temperature is 73 F and the annual precipitation amount is 45.8 in (Weather Base, 2015). St. Petersburg supports a permanent population of approximately 249,688 (U.S. Census Bureau, 2014).

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use capitals with titles or proper names

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Sustainability

Sustainability is built into the very core with the City of Saint Petersburg's (n.d.) mission being "to provide efficient and effective public services that protect and enhance sustainability of our environment and the quality of life in St. Petersburg." Making sustainable choices and putting them into practice garnered St. Petersburg the title of Green City in 2006 (a Florida first) from the Florida Green Building Coalition, influencing the "Green St. Petersburg" campaign that brought on a host of green planning and policy (Babcock, 2012). Executive Order 08-01 "Green St. Petersburg" (EO-08-01), is an example of such, promulgated by, then, mayor Rick Baker, regarding city policy surrounding energy conservation, transportation, and green building (Executive Order No. 08-01, 2008).

Energy. In accordance with EO-08-01, the city took a look at existing items that could be easily retrofitted for increased energy efficiency. Incandescent traffic signal bulbs are in the process of being exchanged for more energy efficient LED versions (City of St. Petersburg, 2013a). Similarly, all lighting systems owned by the city both throughout and within parking structures will be converted to induction lighting (City of St. Petersburg, 2011). To ensure the city is making the necessary changes, energy audits have been implemented (Babcock, 2012).

Transportation. Reduced costs and lowered negative environmental externalities have also been felt in the transportation sector as a result of the city's move to the greener side. A majority of the vehicle fleet in the city derives fuel from biodiesel or ethanol (10 percent) sources. For those vehicles that are driven by diesel fuel, diesel particulate filters were installed to reduce overall emissions. Additionally, hybrid vehicles have been introduced to the fleet, reducing emissions even further (City of St. Petersburg, 2011).

Green building. City buildings were assessed for efficiency by energy audits and some changes were made. Going above these smaller changes, the city implemented specific policies dictating green city buildings. New city buildings must meet LEED-NC (new construction) standards as set forth by the U.S. Green Building Council (USGBC). LEED-EB (existing building) standards must be met for those existing structures over 10,000 ft². The city has already shown progress in this area with four buildings certified or proposed to be and several others awaiting conversion (City of St. Petersburg, 2013b).

Water Management

The city uses approximately 31 mgd of water that is purchased from Tampa Bay Water and treated on site at the St. Petersburg Cosme Treatment Plant. The water is derived from ground and surface waters as well as desalinated water (City of St. Petersburg, 2015a).

Stormwater. Stormwater has proven to be quite troublesome for the city. 300 areas of repair have been identified to properly route the stormwater and ensure minimal flooding. The repairs have been slow to start due to funding difficulties but the city has charged fees to acquire necessary amounts (City of St. Petersburg, 2013c). In the meantime, education and markers are provided to increase knowledge about drainage pollution and harmful substance discharge has been made illegal (City of St. Petersburg, 2013d).

Water Reuse. St. Petersburg, this city of firsts, actually has the U.S.'s first reclaimed water system that, in size, rivals many other systems of its kind all over the world. The City of St. Petersburg (2014b) describes this system as "four reclaimed water facilities provide over 37 million gallons of reclaimed water per day to 10,284 active customers." This use of reclaimed water helps to offset potable water use. (City of St. Petersburg, 2014b).

Water Conservation. To conserve water, the city has taken multiple steps including education, incentives, and restrictions. Rebates of 100 dollars for efficient toilet purchases are offered to residents. Indoor water kits, used to increase the water efficiency of other appliances such as showerheads and faucets, are provided to residents. The "sensible sprinkling program," provides a professional sprinkler audit, rain sensor installation, and information about efficiency free of charge. Additionally, watering restrictions are placed on residents, limiting them to twice a week (three times a week for reclaimed water users) (City of St. Petersburg, 2015b).

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Are you saying that the water provided by TBW is treated on site? I think TBW provides them with a treated water!

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You could discuss grey and green infrastructure for stormwater management

Are you saying that the water provided by TBW is treated on site? I think TBW provides them with a treated water!

You could discuss grey and green infrastructure for stormwater management

Climate Change

Climate change is not expected to alter the temperature of Florida, leaving average temperatures somewhat constant. The most significant impacts the state of Florida and, subsequently, city of St. Petersburg are likely to feel is from sea level rise (SLR) and storm surges (Lazarus, 2009).

Impacts. Considering St. Petersburg is surrounded nearly entirely by water and much of its area is at a considerably low elevation, it is clear that SLR and storm surges are a looming problem. Using the U.S. Army Corps of Engineer's mid-range sea level rise prediction, Climate Central (2014) estimates a 3.2 feet sea level rise in St. Petersburg by 2100. The current state of the stormwater system already invites flooding as the city awaits repairs and connections (City of St. Petersburg, 2013c). SLR and storm surges will only increase the level of flooding, directly or indirectly through backing up into the existing stormwater infrastructure (Ruppert & Grimm, 2013). A specific area of concern is the city's drinking water. Since water resources are derived, in part, from groundwater, saltwater intrusion due to overconsumption and SLR is a very real threat (City of St. Petersburg, 2015a). Economically, SLR and storm surge effects can prove to be quite devastating. Governmental and residential structures stand to feel the negative effects of these climactic changes (Ruppert & Grimm, 2013). Another financial area of concern is the tourist industry that may suffer due to decreased numbers of people and, consequently, decreased dollars spent in the local economy. Environmental effects could be felt as well as essential flora and fauna would be flooded over time, resulting in habitat loss, diminishing the role they play in ecosystem services. Additionally, stormwater's capability to bring contaminants wherever it flows poses its own unique threat to environmental and public health that existing infrastructure will find difficult to combat in light of overwhelming changes in trends (Tirado, Clarke, Jaykus, McQuatters-Gollop, & Frank, 2010).

The Next Step

It is true that St. Petersburg has come a long way in term of sustainability but the harsh reality is that climate change poses both a direct and indirect threat to the city. St. Petersburg has proven itself in the realm of sustainable initiatives but will have to ramp up efforts in order to combat the ill effects of climate change that are likely to impact the city in the future. It is recommended that the city take these threats seriously and incorporates appropriate mitigation and resilience strategies into its planning.

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great sources

An Introduction to Los Angeles

Los Angeles is perhaps known to be the entertainment capital of the U.S. It is rich with culture, is the

number one port in the world for imports and exports, has a diverse population, and is a popular tourist destination. Its economy relies heavily on tourism and hospitality, with 1 in 10 people employed in the industry (Los Angeles Tourism and Convention Board, 2014). According to the US Census Bureau, Los Angeles County has over 10 million people (2013). The city itself boasted a population of 3.8 million in 2010 (Los Angeles Tourism and Convention Board, 2014). *Add statement to refer reader to Figures 1 & 2*

Los Angeles area enjoys a unique assortment of geographic pleasures. It is located in a desert basin, and is surrounded by mountains and 75 miles of coastline. Some of the region sits below sea level, but an altitude of 10,080 feet can be found on its highest peak of Mt. San Antonio (Los Angeles Tourism and Convention Board, 2014). Its annual average temperature is 63.8°F, with an average low of 55.9°F and an average high of 71.7°F. Its average annual precipitation is 18.67 inches (U.S. Climate Data, 2015). *These figures are based on data from 1981-2010*. Like many other cities, it is moving toward sustainability, and with good reason, as it has already seen some effects of climate change.



Fig 1. Map of United States with Los Angeles

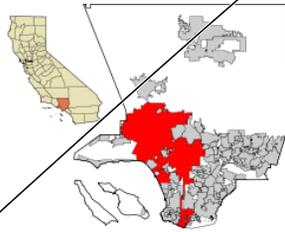


Fig 2. Map of California and Los Angeles County

Sustainability

Los Angeles is known for many things, but perhaps not its green efforts. Instead, it may be better known for the following: *W*orst air quality in the U.S.; congested freeways and traffic jams; high consumer rates; a “park-poor” city, with little nature; a city with its main water source hundreds of miles away. In

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his article "Environmental LA: How Los Angeles Became an Unlikely Model of Urban Sustainability", Christensen points out that LA has not historically been synonymous with sustainability (2014).

However, with a change of political leadership, LA has been making important strides toward cleaning up the city. According to Christensen, Mayor Eric Garcetti, elected in 2013, is "a strong advocate for localizing water sources, cutting energy use, promoting efficiency, confronting climate change and providing access to parks and nature." He is enacting new initiatives to prove it.

The weather in LA is a strength in pursuing energy efficiency for heating and cooling. It is mild, with little rain, and around 329 days of sun per year. Combined with a new initiative requiring all new and remodeled buildings to have reflecting roofs, energy use for heating and cooling can be reduced. Around 36,500 streetlights have been replaced with LEDs. LA also gives great incentives to feed energy back into the grid from the best solar-rooftop program in the country (Christensen, 2014).

Water may be the very thing L.A. has gotten its poor environmental reputation for, as it depends on water from the Owens Valley, the Sacramento-San Joaquin Delta and the Colorado River, all of which are a great deal away from the populous county. However, the region is actually quite conservative with its water usage. It is suggested that during times of drought, the citizens of Los Angeles have learned to value water and take steps to conserve it, even in the wet season. "The city now consumes less water than it did in 1970, while its population has grown by more than a third" according to Jacques Leslie of the NY Times (2014). Diversified efforts for conservation, reuse and collection have contributed to success in water management, but it still faces some challenges.

Los Angeles is a concrete city with few natural pockets. There is seldom rain, but when there is, concrete funnels move excess water to the ocean. However, after serious droughts, the municipality is rethinking urban water management. Water should not be guided away from the city in times of excess, but should be harnessed for times of drought. Recent call for adapting urban water management has been heard and the city has a twenty year plan to turn the Los Angeles Basin into its own localized watershed through stormwater capture and catchments in the form of watersheds and wetlands. The city wants to replenish depleted aquifers by making more surfaces pervious, and installing proper drainage and storage basins. The plan will introduce localized water sources for a city currently importing 89% of its water (Christensen, 2014).

There are also efforts being made to clean up surface waters, reduce pollution and find ways to reuse water. The Sanitation Districts of Los Angeles County, one of the largest wastewater recycling facilities

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parks and nature" (Christensen, 2014, p ##).

ALWAYS include a citation for quotes, with page numbers for "direct quotes"

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in the world, operates 10 facilities throughout the region devoted to treating waste water to near drinking water quality. The treated water is used for groundwater recharge, industrial and commercial applications, agriculture, and numerous irrigation purposes, supplementing traditional water supplies.

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Climate Change

Climate Change is the phenomenon of instable climate variation, exacerbated by the burning of fossil fuels and the excessive amounts of carbon entering the atmosphere, prominent since industrialization. It has severe consequences for our planet, and as the earth warms, we can anticipate more intense weather events, heavier rainfall in some areas, and droughts in others, longer and hotter heat waves, and rising acidity and temperature in the oceans as well as glacial melt, contributing to rising sea levels. Localized impacts of climate change can have devastating effects on infrastructure, ecosystems, wildlife, people and water sources (Pew Center on Global Climate Change, 2011).

Climate Change in the Southwest Region

Regionally, climate change is expected to exhibit itself in various ways. Los Angeles is located in the Southwest region of the United States, a region highly effected by the symptoms of climate change due to the region's water supply, geography, location, and climate. Some symptoms of climate change that are already apparent in the region are wildfires, insect breakouts, severe droughts, coastal flooding and erosion, sea level rise, early snow melt and water scarcity (National Climate Assessment, 2014).

Of these, water issues such as salt water intrusion, early snowmelts and scarcity due to droughts threaten the populated city immensely. Miles of coastline are threatened by rising seas. Sea level rise not only leads to coastal flooding and erosion, but can create salt water intrusion into aquifers relied upon for drinking. This is already an issue in Los Angeles County (NRDC, 2011). Secondly, an increase in average temperatures will decrease snowpacks and alter the timing of stream flows, leading to earlier snow melts and reduced quantity of surface waters during the dry season.

Most notably, drought is climate change's greatest weapon against the Southwest region, as water resources become scarce and agriculture struggles. This region has always faced droughts, so some point to the 'envelope of variability' while some blame climate change. At San Gabriel Valley Water Forum, held in Pomona, California's drought was discussed, along with climate change vs. regional variability, and leading experts expressed that climate change's contribution to the droughts comes via

temperature. Precipitation levels may remain the same, but the evident upswing in temperature will have significant impacts on water sources (Austin, 2015). High temperatures lead to faster evaporation in the dry season, when water is already scarce and demand is higher, due to agriculture (NRDC, 2011).

Conclusion

Los Angeles is a unique city geographically and ethnically, and has much to offer to its residents, celebrities and visitors. Like so many others, it is not immune to the effects of climate change and already has experienced more severe droughts and wildfires, salt water intrusion, sea level rise and coastal flooding as well as rising temperature as a result of the changing climate. It is aware of the stakes, and, like the rest of the world, must choose now how to adapt to recent impacts and take action to mitigate future threats.

Good point raised in terms of challenges. Build on these for assignment 2 when you will discuss approaches/solutions to the challenges, particularly in terms of stormwater(flooding, water quality issues)

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