

City of Tempe Climate Action Plan

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Renewable Energy and Energy Efficiency

Tempe goal: 20% renewable municipal energy sources by 2025

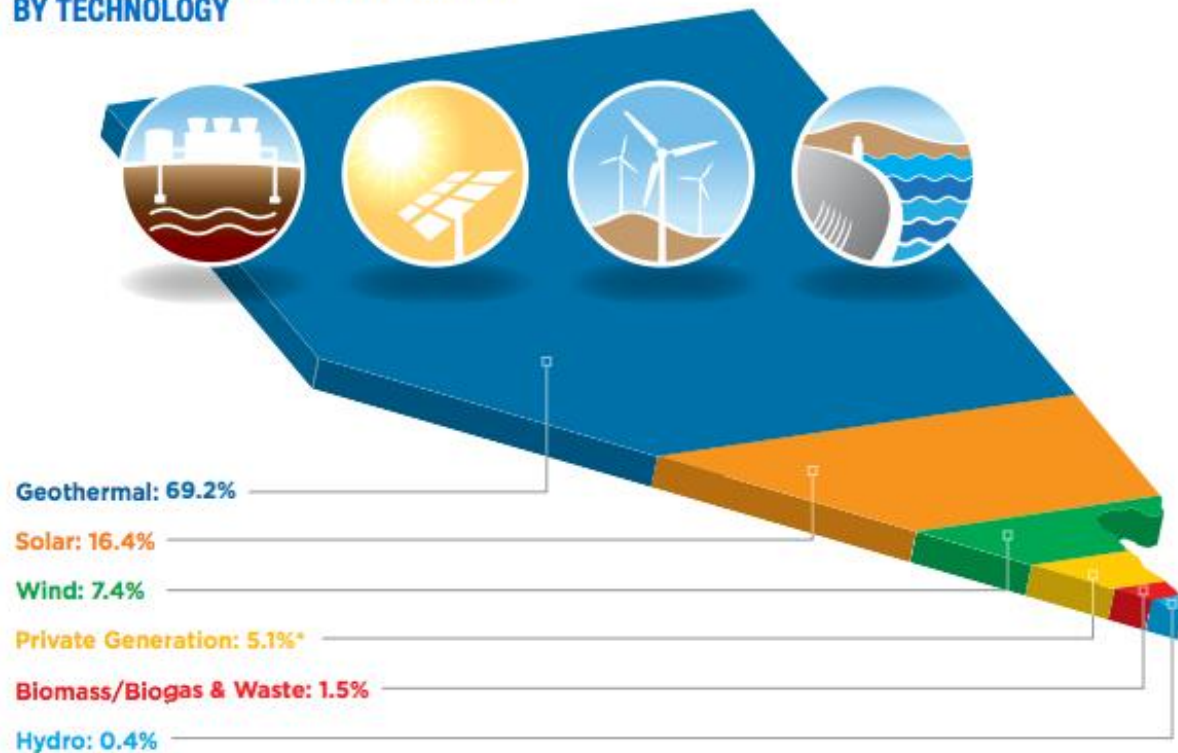
- Las Vegas 100% renewable by end of 2017
- Similar arid/hot environment, tourism heavy



All City of Las Vegas buildings & facilities are under Renewable Energy Agreement

- 3-megawatt solar plant
- net-metered solar-covered parking at 40 different buildings, facilities, fire stations, parks, community centers, and at its wastewater treatment plant

2015 RENEWABLE PORTFOLIO CREDITS BY TECHNOLOGY



*Private Generation includes solar, wind, and hydro systems installed at a customer locations.

Short-Term Solutions

The Nest thermostat

- 1st thermostat in America with an Energy Star from the EPA
- Independent studies show Nest has saved customers an average of 10-12% on heating bills, 15% on cooling bills
- Pays for itself within 2 years
- Some energy companies offer automatic \$249 rebate or
- Tempe doesn't offer rebates, 30% of homes



Solid Waste & Recycling

On-site composting for large businesses and institutions

- Statute from the Arizona Department of Environmental Quality makes independent composting difficult for restaurants
 - Classifies all commercial waste as municipal solid waste
 - Detrimental to a restaurant's ability to compost as all municipal solid waste must be handled in a fully-lined facility
 - Targeting not food waste, but the waste stream
- Work towards making on-site composting easier to achieve for smaller-scale business



Solid Waste & Recycling

2015 - Phoenix city council approved contract with Recycled City LLC to utilize food waste services

- Charges individuals and businesses to collect food waste, turns waste into compost, uses it to fertilize locally grown vegetables and sells the vegetables back to individuals
- Beneficial because of expensive and difficult overhead cost of setting up on site composting
- 3 year contract, net Recycled City \$12,000 per year to divert food waste from the Phoenix City Hall, the Calvin C. Goode Building, and Phoenix Fire Station No. 1
- Yard/food waste made up 45 percent of Phoenix's solid waste stream
- For 10-\$25 a month Recycled City picks up the food waste from residents
- Tempe location of the Original ChopShop Co. has used Recycled City's composting service



Transportation

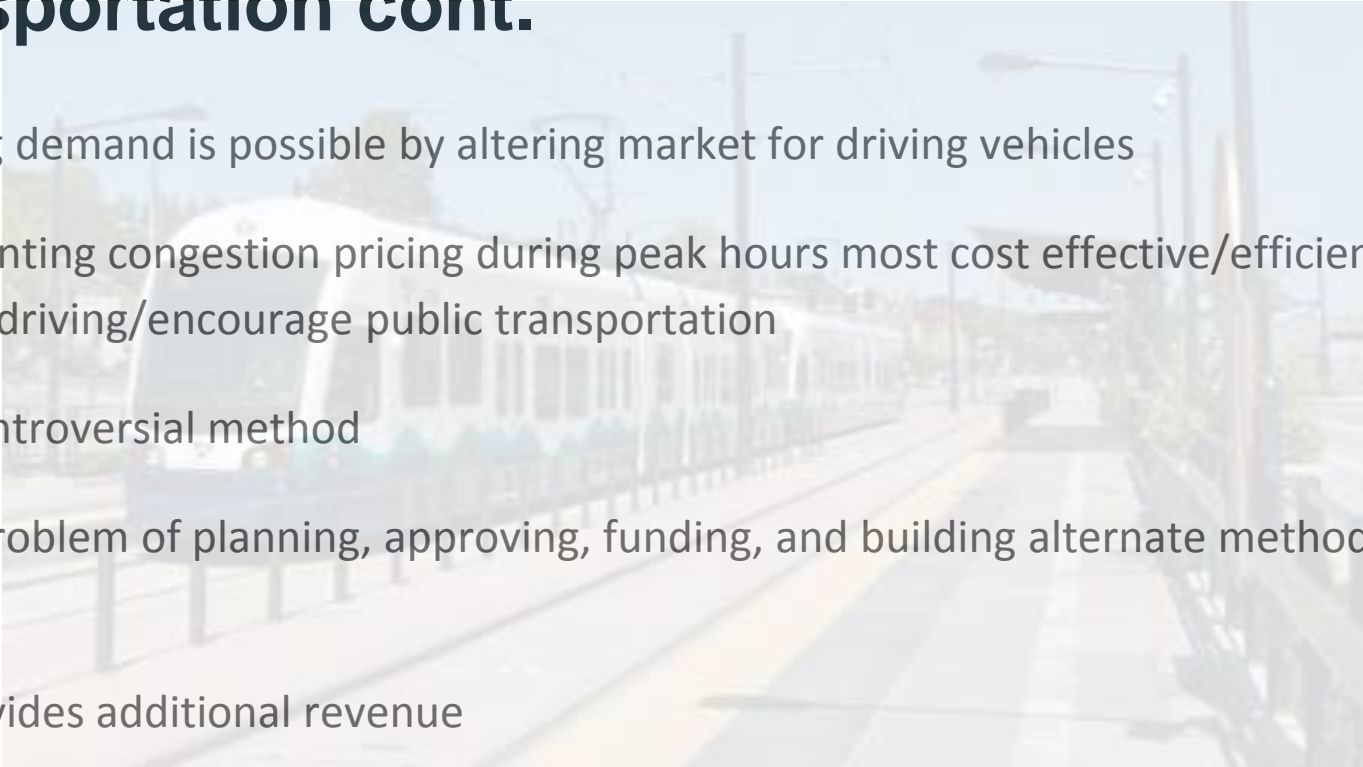


Los Angeles County vs. Maricopa County

- Polycentric cityscape, sprawling suburbs, medium-low population density
- High vehicular traffic that increases each consecutive year
- Key finding indicates that neither increasing supply (more lanes) or increasing alternative methods (increasing amount of buses and light rails) are as effective as changing demand
- Growth of automobile traffic has outpaced amount of lanes
- More lanes and favorable conditions cause triple convergence

Transportation cont.

- Changing demand is possible by altering market for driving vehicles
- Implementing congestion pricing during peak hours most cost effective/efficient method to curtail driving/encourage public transportation
- More controversial method
- Avoids problem of planning, approving, funding, and building alternate methods of travel
- Also provides additional revenue



Transportation cont.

No free employee parking

-Individual driving reduces 20%

More expensive parking

-50% more expensive see a reduction in commuting by 10-30%

“Cash-Out” programs

-Provides drivers monetary incentives such as \$50 a month for not using parking

-Reduce commuting by 20%



Residential Water Consumption



- WaterSense estimates approximately 220 million showerheads installed in US homes
- Showering is one of the leading water uses in the home
 - Accounts for nearly 17% of residential indoor water consumption (≈ 12 gpd per person)
- More than 1.2 trillion gal of water used for showering in the United States annually,
 - Approximately the amount of water delivered for the states of New York and New Jersey for 1 year

Residential Water Consumption cont.

A background image showing a hand holding a clear glass under a chrome faucet. Water is being poured from the faucet into the glass. The image is semi-transparent and serves as a background for the text.

If every household in the United States installed WaterSense-labeled showerheads, could annually save:

- More than \$1.5 billion in water utility bills

- More than 250 billion gallons of water

- Could provide necessary water and then some for public supply system in Miami, FL.

- Could also save Americans about \$2.5 billion annually in water-heating costs



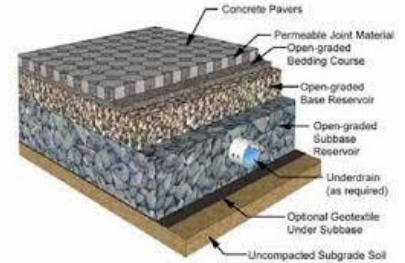
Rebates and Incentives

- Showerheads offer water utilities a unique opportunity to offer rebates and giveaway programs
- Less expensive than toilets, but with greater impact than bathroom sink faucets, showerheads save more water and energy
- On average, the Tampa Water Department utility hands out 1,500 to 2,000 showerheads per year
- Each home using WaterSense-labeled showerheads will be able to save as much as \$50 in utility bills and more than 2,300 gal of water per year

GHG Emissions

- Water efficiency savings translate into capital and operating savings
- According to the EPA, it takes a large amount of energy to deliver and treat the water we use everyday
- American public water supply and treatment facilities consume about 56 billion kilowatt-hours (kWh) per year
- If one out of every 100 American homes retrofitted with water-efficient fixtures, we could save about 100 million kWh of electricity per year, avoiding 80,000 tons of greenhouse gas emission
- If 1 percent of American homes replaced their older toilets with WaterSense labeled models, the country would save more than 38 million kWh of electricity

Land Use and the Built Environment



Prioritize Warm-Mix Asphalt for road construction

Uses 25% less energy to build and maintain - is 90% recyclable as well

Fully implemented across U.S. - save 150 million gallons per year - equivalent to 210,000 cars off the road

Federal Highway Administration supports use of warm-mix asphalt

By 2020 more than \$3.5 billion will be saved by reducing fuel needed for producing asphalt