Envision Utah

Dear Air Quality Board Members,

As you know, Utah's air quality is an issue that matters to everyone. On October 15, 2013, Governor Herbert asked Envision Utah to convene and facilitate the Clean Air Action Team. The individuals on the team represent a broad spectrum of interests and expertise in our community, including representatives from health care, business, nonprofit organizations, government, academia, transportation, and others.

This independent Team was tasked with working to provide a set of broadly supported recommendations to improve our air quality. In October 2014 the Clean Air Action team presented its final recommendations to the Governor, legislative leadership, and to your Board. This set of comprehensive recommendations will significantly improve Utah's air quality in the winter and summer. These recommendations are intended to complement and add to the actions proposed in the current State Implementation Plan process.

The Governor's Clean Air Action Team respectfully submits the attached draft rule regarding ultra-low NOx water heaters to the Air Quality Board for your consideration. Adoption of this rule will allow suppliers to move out their current inventories of water heaters and move toward selling only ultra-low NOx water heaters as of a date 1-4 years in the future.

Burning natural gas in homes, whether in furnaces, water heaters, or other appliances, produces nitrogen oxides (NOx), which react with other gases in the air to form particulate matter. Water heaters make up approximately 45% of a building's emissions. Ultra-low NOx water heaters emit 70% less NOx than their counterparts. If every water heater were replaced with the ultra-low NOx variety, building emissions would be reduced by about 37%. The average life of a water heater is 7 years, and it is estimated that within 10 years almost all our water heaters could be ultra-low NOx models. Although ultra-low NOx water heaters do not necessarily increase energy efficiency, they do not cost more to manufacture than standard water heaters, and it is estimated that if the demand for ultra-low NOx water heaters in Utah increased this product would be brought to local stores, making the cost and availability comparable to what Utahns experience today with standard water heaters.

Sincerely,

Lonnie Bullard	Michelle Hofmann, MD, MPH	Robert Grow
Chairman	Medical Director	President and CEO
Jacobsen Construction	Riverton Hospital's Children's Unit	Envision Utah
Team Co-Chair	Team Co-Chair	Team Facilitator

Clean Air Action Team Recommendations

Poor air quality during certain periods of the year ranks as Utahns' greatest concern about their quality of life, and it threatens not only our health but our economy as we seek to recruit and retain businesses and a high-quality workforce.

On October 15, 2013, Governor Gary Herbert asked Envision Utah to convene and facilitate the Clean Air Action Team, which includes representatives from health care, business, nonprofit organizations, government, academia, transportation, and more. This independent team was tasked with working to provide a set of broadly supported recommendations to improve our air quality.

The team's consensus recommendations are set forth below. Combined with the controls that are already being put into place through the state's State Implementation Plan efforts, these recommendations will make a substantial difference in the amount of emissions we put into our air. Moreover, the projected cost to Utahns is fairly minimal.

With about half of our emissions coming from automobiles and another 40% coming from buildings and other "area sources," most of our air pollution originates from our own cars, homes, and businesses. These recommendations target those emission sources, with particular emphasis on strategies that (1) result in substantial reductions in emissions, and (2) require relatively little expense. With concerted action, together we can clean our air.

As Utah's population continues to grow, these actions become even more imperative. By 2050, the Governor's Office of Management and Budget estimates that the state's population will nearly double. In our urban areas where air quality is a challenge, that translates to roughly doubling the number of miles we drive and the number of buildings that need to be heated. To improve our air quality, we will need to significantly reduce the amount of pollution each person produces.

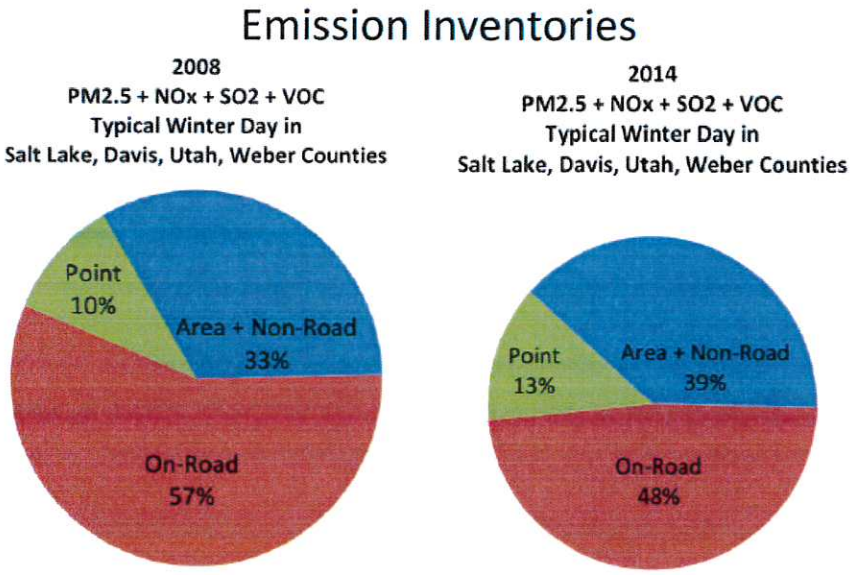


Figure 1. Source: Utah Division of Air Quality

Summary of Recommendations

1. Ensure Utahns have access to low-sulfur Tier 3 fuel as soon as possible.
2. Accelerate the transition to cleaner Tier 3 cars. If all cars and fuel were Tier 3 by 2050 we would remove approximately 62% of mobile emissions per day from our air.
3. Reduce the amount of wood burning that occurs during inversion periods. Eliminating residential wood burning would decrease daily area source emissions by about 5% in 2050.
4. Invest additional resources in public transportation and facilities that make "active transportation" modes like biking and walking more convenient. By 2050, if we reduce the number of miles driven per capita by 10% we would reduce daily mobile emissions by roughly 8%.
5. Allow the Air Quality Board and Division of Air Quality to adopt rules that are more stringent than federal regulations and continue to give the Division of Air Quality sufficient budget to continue effectively achieving its mission.
6. Adopt a rule to require suppliers to sell only ultra-low NOx water heaters. Replacing all water heaters with ultra-low NOx models would reduce daily area emissions by about 5.3% in 2050.
7. Increase the energy efficiency of our existing and new buildings. Increasing the efficiency of existing buildings could reduce area source emissions by about 1.7%. Increasing new building efficiency by 50% would eliminate approximately 2.4% of our area source emissions by 2050.
8. Continue current efforts to reduce emissions from the oil & gas operations within the Uintah Basin.

R307. Environmental Quality.
R307-XXX. NO_x Emission Limits for Natural Gas-Fired Water Heaters.

R307-XXX-1. Purpose.

The purpose of R307-XXX is to reduce emissions of nitrogen oxides (NO_x) from natural gas-fired water heaters.

R307-XXX-2. Applicability.

R307-XXX applies to the sale and installation of natural gas-fired water heaters on the implementation schedule as outlined in Table 1.

Table 1
Statewide Implementation Schedule of R307-XXX

Location	Rule Implementation Date
Box Elder, Cache, Davis, Salt Lake, Tooele, Utah and Weber Counties	January 1, 2016
Washington, Duchesne and Uintah Counties	January 1, 2018
Remaining portions of Utah	January 1, 2019

R307-XXX-3. Exemptions.

The requirements of R307-XXX shall not apply to:

(1) units using a fuel other than natural gas;

(2) units used in recreational vehicles; and

(3) units manufactured in Utah for shipment and use outside of Utah.

R307-XXX-4. Definitions.

The following additional definitions apply to R307-XXX:

"Heat output" means the enthalpy of the working fluid output of the unit.

"Heat input" means the heat of combustion released by fuels burned in a unit based on the higher heating value of fuel. This does not include the enthalpy of incoming combustion air.

"Recreational vehicle" means a motor home, travel trailer, truck camper, or camping trailer, with or without motive power, designed for human habitation for recreational, emergency, or other occupancy.

"Natural gas-fired water heater" means a device that heats water by the combustion of natural gas to a thermostatically-controlled temperature not exceeding 210°F (99°C)for use external to the vessel at pressures not exceeding 160 psig.

R307-XXX-5. Standards.

(1) Beginning on the rule implementation date specified in Table 1 for each area of the state, no person shall sell or install in an area in which R307-XXX is applicable any natural gas-fired water heater with an emission rate exceeding the limit in Table 2. The NO_x limits are expressed in nanograms of nitrogen oxides (calculated as NO_2) per joule of heat output.

TABLE 2

NO_x Emission Rate for Natural Gas-Fired Water Heaters

Category	Limits(ng/Joule)
Water heater up to 75,000 BTU/hr, excluding those installed in mobile homes	10
Water heater 75,001- 2,000,000 BTU/hr	14
Any tank with power assist	10
Mobile home water heater	40
Pool/spa heater less than 400,000 BTU/hr	40
Pool/spa heater 400,001-2,000,000 BTU/hr	14

(2) The water heater manufacturer shall display the model number and the NOx emission rate of a water heater complying with this rule on the shipping carton and on the permanent rating plate of each unit.

YOUR UTAH. YOUR FUTURE.

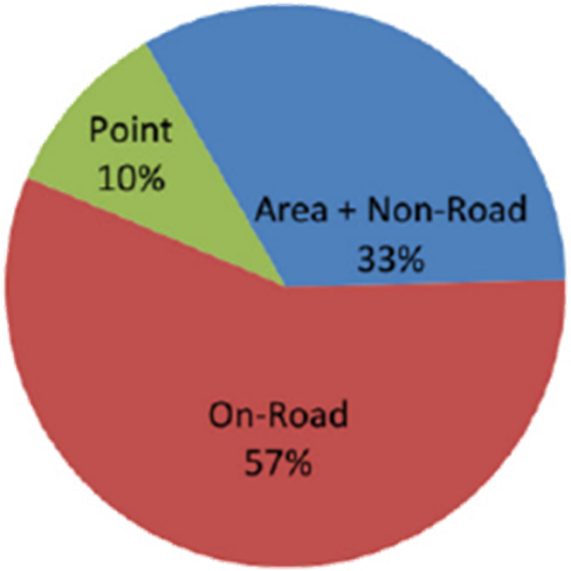
Clean Air Action Team Recommendation

Ultra-low NOx Water Heaters

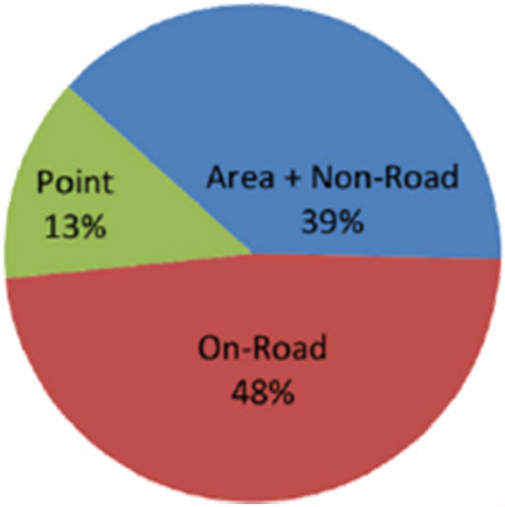
Envision Utah How we grow matters.

Emission Inventories

2008
PM2.5 + NOx + SO2 + VOC
Typical Winter Day in
Salt Lake, Davis, Utah, Weber Counties



2014
PM2.5 + NOx + SO2 + VOC
Typical Winter Day in
Salt Lake, Davis, Utah, Weber Counties

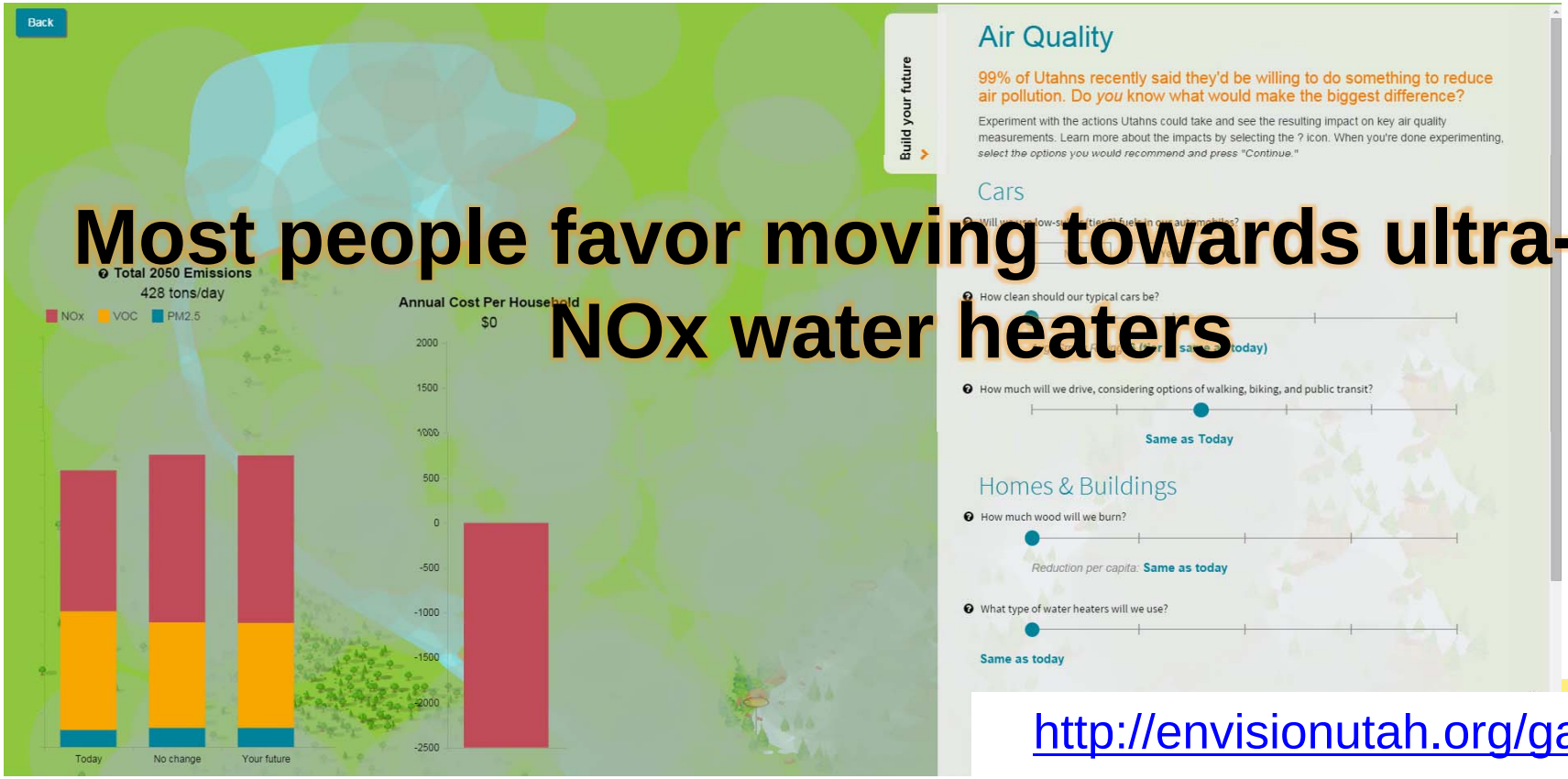


Source: Utah Division of Air Quality

Projections

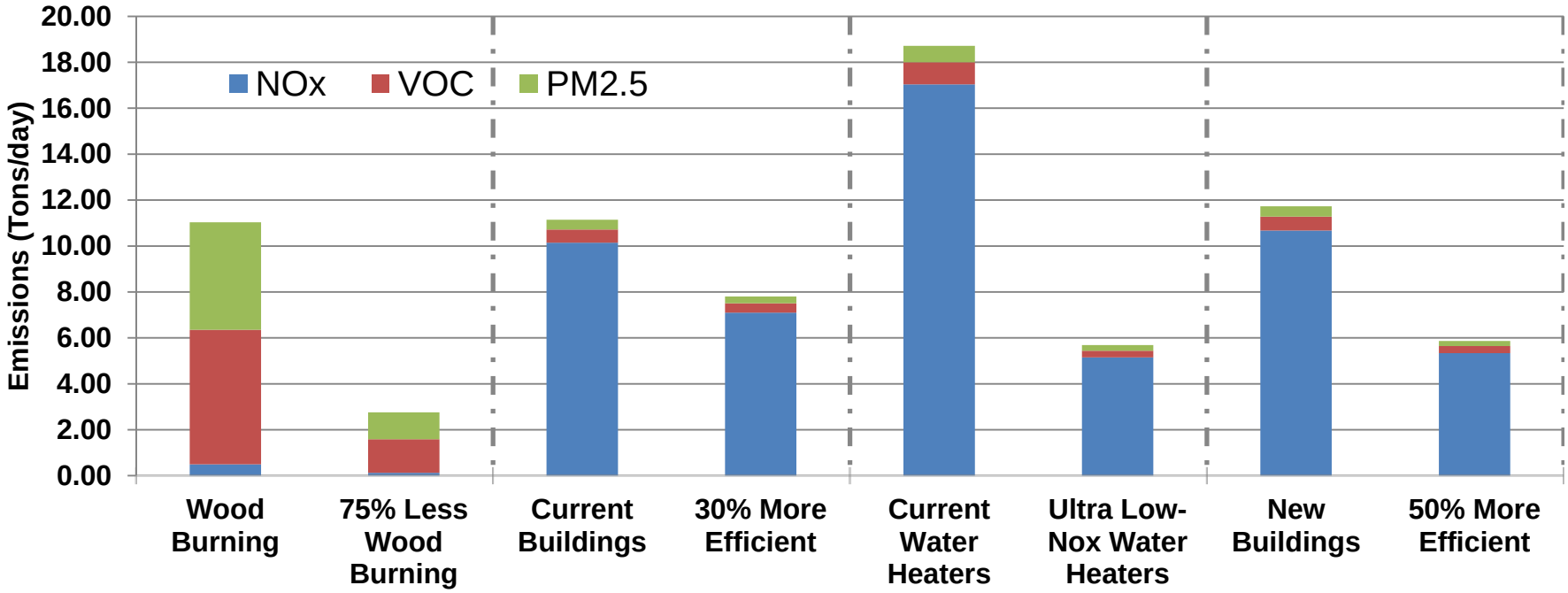
	2010 Estimates	2050 Projection
Buildings	746,609	1,532,371

Build Your Utah 2050 Web App



Most people favor moving towards ultra-low NOx water heaters

http://envisionutah.org/game/#/



- **Total projected building emissions for 2050 are approximately 50 tons/day.**
- **With all above changes, total building emissions would be cut in half.**

Cost

× Remove	× Remove	× Remove	× Remove
Whirlpool 6th Sense 40-Gallon 6-Year Tall Gas	Whirlpool 6th Sense 40-Gallon 6-Year Tall Gas	Whirlpool 6th Sense 40-Gallon 12-Year Tall Gas	Whirlpool 6th Sense 40-Gallon 12-Year Ultra Low
$377.00	**$444.78**	**$579.00**	**$551.04**
Add to Cart +	Add to Cart +	Add to Cart +	Add to Cart +
Lo-NOx	Ultra –low NOx	Lo-NOx	Ultra –low NOx
333568	333578	333564	333573
N40T61-343	NU40T61-403	N40T121-403	NU40T121-403
★★★★½ 759 reviews	★★★★½ 132 reviews	★★★★½ 190 reviews	★★★★½ 170 reviews
$377.00	$444.78	$579.00	$551.04
Credit Promotion	Credit Promotion	Credit Promotion	Credit Promotion

Source: Lowes Web Retailer