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HEAT PUMP TO GAS CONVERSION MARKET

Findings

- Based on actual bills reported in the EIA RECS survey, in all but one region, heat pump customers near gas mains could see lower energy bills with a natural gas furnace and water heater compared to their peers. On average, customers using gas over heat pumps saved over \$376.02 annually.
- Based on the same survey, no households in New England reported using a heat pump if natural gas was available in the same neighborhood. The Mountain North region also showed no customers with both a heat pump and an electric water heater if gas was available. Data in the table for each region includes households beyond existing gas mains.
- Differences exist between heat pump customers in northern climates. Northeastern homes tend to be more multifamily units, while Midwestern homes are more likely larger detached single-family units with higher heating loads. Also, due to higher CDD values in the Midwest, homes may perform better in the Northeast due to a focus on heating rather than balancing seasonal loads.
- Seven of ten regions reported customers that use natural gas for space heating had significantly larger homes. This required an adjustment to the conversion heating load. Households that switch to natural gas could see even better savings compared to the average gas customer.
- Regions with above-average water-heating energy consumption showed a high market share of large-capacity tanked systems while other regions had more medium-capacity systems. Natural gas households, on average, use more medium capacity tanks than large-capacity tanks.

	New England*	Middle Atlantic	East North Central	West North Central	South Atlantic	East South Central	West South Central	Mountain North**	Mountain South	Pacific
Heat Pumps Near Gas Main	63,034	221,224	270,441	110,433	950,906	719,260	446,727	23,479	218,799	432,770
Average Sq Ft for Gas Home	1,907	2,202	2,281	2,238	2,287	1,672	2,217	2,425	1,996	1,805
Average Sq Ft for HP Home	1,359	1,258	1,796	3,058	1,708	1,790	1,740	2,722	1,663	1,474
Weather Normalization Factor	99%	98%	98%	90%	86%	86%	91%	88%	93%	81%
Actual Heat Pump Household Energy Bills Adjusted for Weather										
Price \$/kWh \$2018	\$0.21	\$0.16	\$0.11	\$0.11	\$0.11	\$0.13	\$0.13	\$0.11	\$0.13	\$0.16
Space Heating kWh	2,348	2,432	4,222	7,670	1,817	3,138	3,062	7,979	900	2,923
Water Heating kWh	1,921	3,142	2,796	6,309	2,897	3,021	3,029	5,016	1,838	4,883
Adjusted Energy Bill \$2018	\$879	\$890	\$806	\$1,603	\$520	\$790	\$775	\$1,458	\$343	\$1,246
Actual Central Air Natural Gas Furnace Household Energy Bills Adjusted for Weather & Sq Footage										
Price \$/Mcf \$2018	\$15.0	\$11.2	\$13.3	\$11.3	\$10.6	\$8.5	\$8.7	\$8.1	\$11.3	\$11.8
Space Heating Mcf	28.5	21.5	33.4	50.1	29.7	27.7	14.2	53.4	20.9	8.2
Water Heating Mcf	15.9	16.0	16.0	15.2	14.2	10.1	13.6	23.3	16.5	15.4
Adjusted Energy Bill \$2018	\$667	\$420	\$656	\$735	\$467	\$323	\$241	\$618	\$424	\$279
Potential Savings/Loss*	\$212	\$470	\$150	\$868	\$53	\$468	\$534	\$840	(\$81)	\$967

*No heat pump customers near gas main according to the RECS survey. Average new england customer not near gas used for model.

**No heat pump customers near gas main had an electric water heater according to the RECS survey. Average north mountain customers not near gas used for model.

***Model is weather normalized, energy prices used were weighted by region, and average space heating consumption adjusted to fit square footage of average heat pump home evaluated

Source: Energy Information Administration, Residential Energy Consumption Survey 2015

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