

Decarbonization of Gas Heating in Massachusetts: An Evaluation of Current Trends and Opportunities



BUSINESS PROBLEM

The state of MA has ambitious carbon emissions reduction goals and the Department of Public Utilities has implemented regulations pushing the state's utilities to pursue decarbonization. National Grid operates a large gas distribution business and seeks to develop strategy for navigating a transition to a low-carbon future. In particular, the company seeks to understand and plan for electrification of gas heating which makes up a significant portion of gas demand in the state.

DATA SOURCES

Customer database (National Grid); History of heat pump adoption (National Grid); Market segments (National Grid)

Data Types and Format

Static databases, time series data

APPROACH

This problem was addressed by evaluating: 1. Existing electrification of gas heating and the state incentives driving that adoption 2. Which gas asset infrastructure projects could be foregone 3. The geographic correlation between where individual incentives for electrification are being used, opportunities for gas asset reduction, and communities facing housing burden.



IMPACT

This study helped provide clarity on existing adoption of heat pump technologies and identified future opportunities related to the electrification of gas heating in MA

DRIVERS



The regulatory environment made this a priority

BARRIERS



Data in disparate datasets, uncertainty in future costs of electrification, uncertainty in the shape of future demand curves

ENABLERS



Welcoming colleagues at National Grid facilitated access to information

ACTIONS



A detailed modeling exercise of where existing adoption is occurring and where future benefits might be best located

INNOVATION



I built a cost/benefit model for evaluating traditional gas distribution infrastructure investments against investing in electrification of customers who would otherwise be served by those assets

IMPROVEMENT



No quantifiable improvement yet, but new approaches may be incorporated in typical processes in the near term

BEST PRACTICES



Ran sensitivity studies to understand impact of input assumptions across a range of reasonable values

OTHER APPLICATIONS



Other utilities, other environmental tradeoffs, etc.