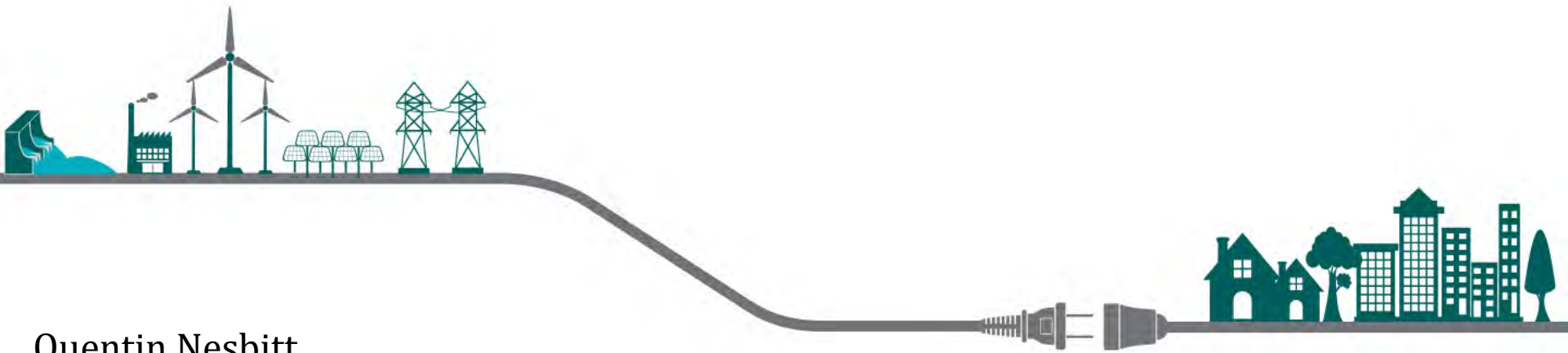
Energy Efficiency in the IRP



Quentin Nesbitt
Customer Relations & Energy Efficiency
Analysis Leader
April 8, 2021

Reliable

WE KEEP THE LIGHTS ON

99.96%

OF THE TIME

Energy efficiency measures that reduce load may be easier to serve.

Affordable

OUR PRICES ARE MORE THAN

20% BELOW

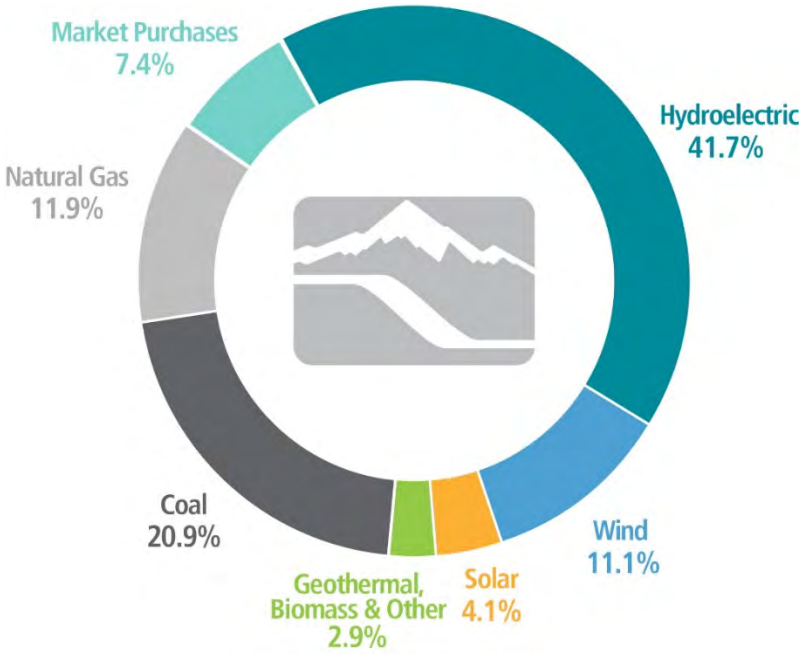
THE NATIONAL AVERAGE

Cost-effective energy efficiency measures help keep rates low.

Clean

- Our energy efficiency programs reduce overall sales.
- Energy efficiency avoided 1.3 % of total kilowatt-hours (kWh) in 2020.

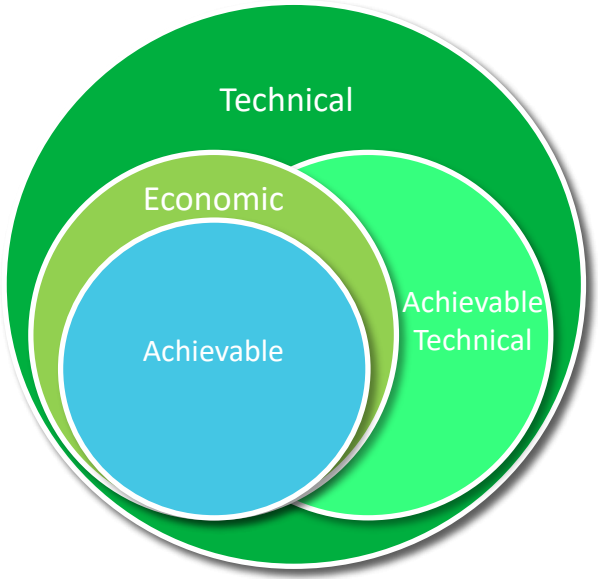
2020 Energy Mix



Energy Efficiency Potential Study

- **Technical**: theoretical maximum regardless of cost
  - **Achievable Technical:** calculated by applying customer adoption curves directly to technical potential
- **Economic:** subset of technical potential that includes only cost-effective measures
- **Achievable Economic**: subset of economic potential that accounts for achievable participation, includes regional initiatives and market transformation

Levels of Potential Energy Efficiency



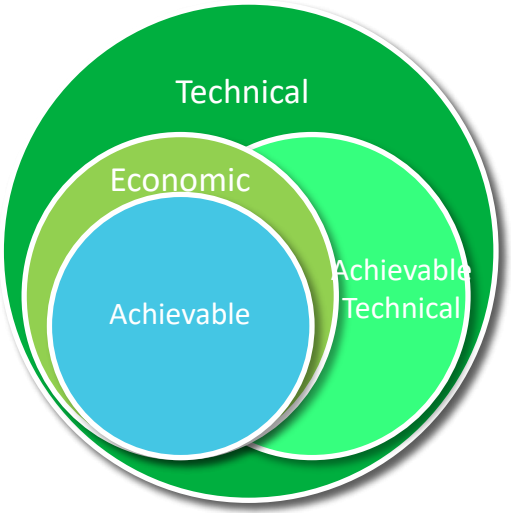
Options for Incorporating Energy Efficiency into IRP Modeling

- Three options discussed at January 2021 Energy Efficiency Subcommittee meeting:

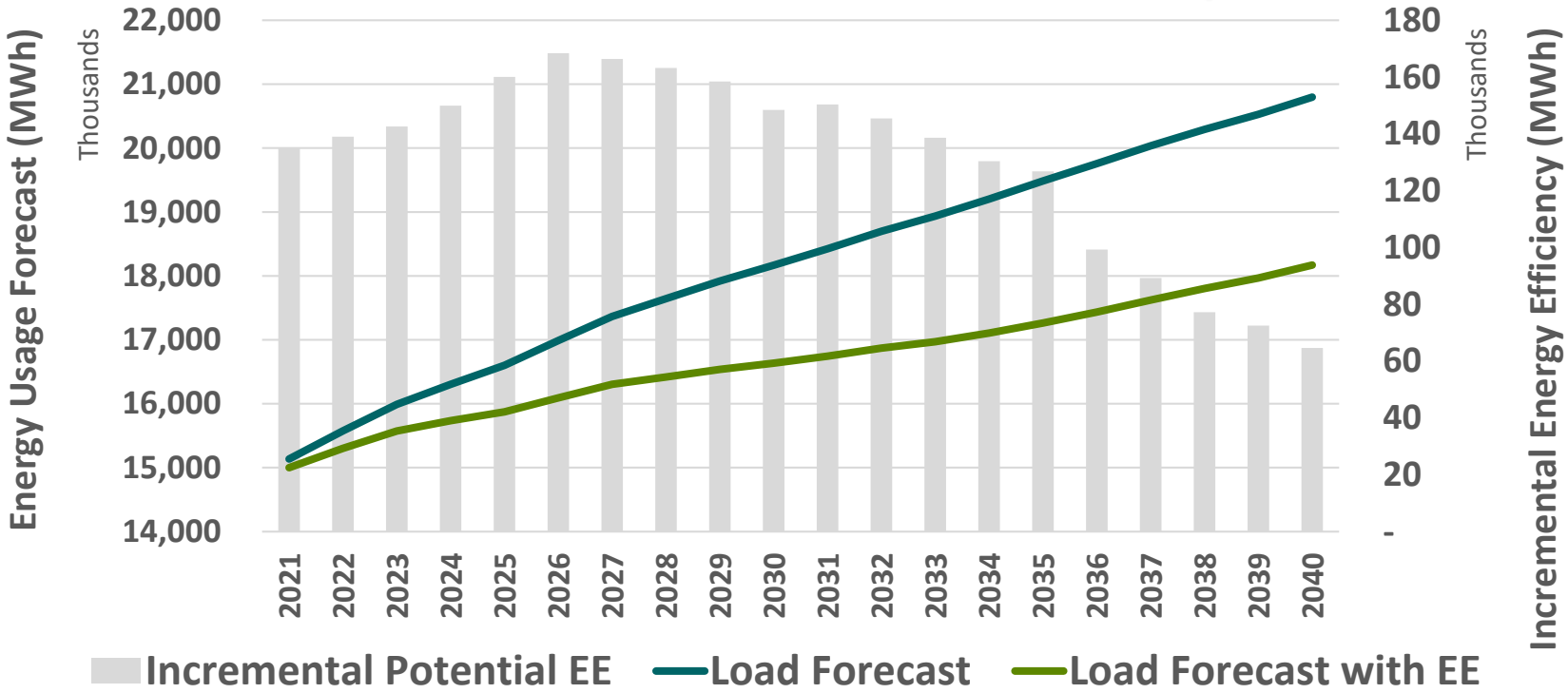
1. Perform economic screening in potential study and include all **achievable economic potential** in the load forecast.

2. Offer all **achievable technical potential** to the IRP model and let it determine what is economic.

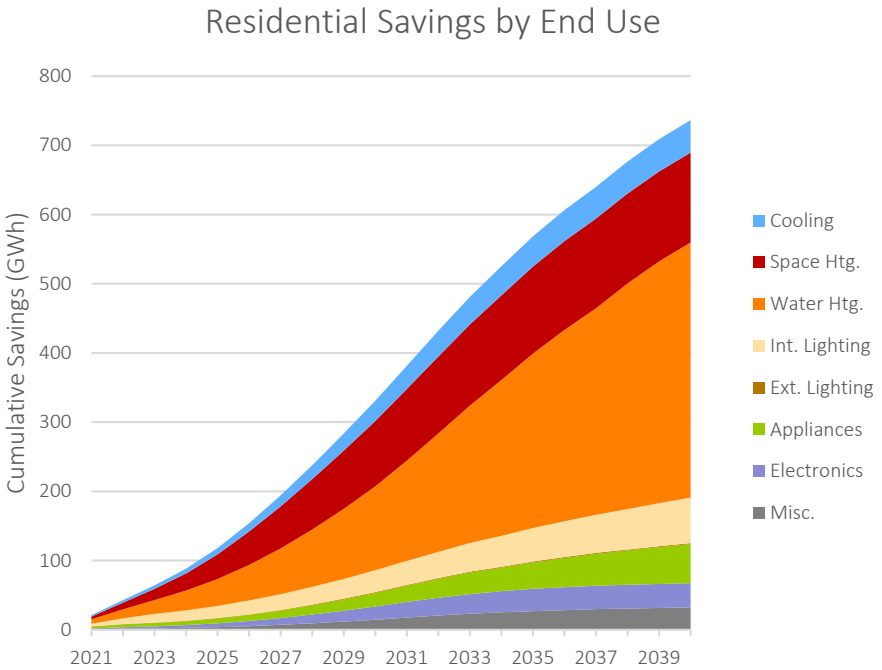
3. Hybrid approach: Include all **achievable economic potential** AND offer additional **achievable technical potential** for screening within the IRP model. **(Subcommittee's preferred option)**

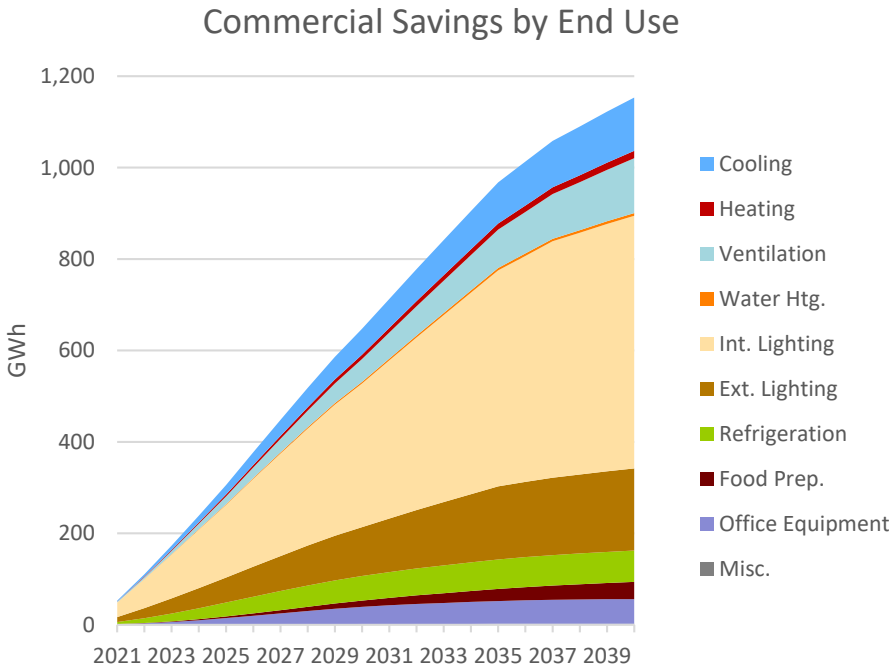


Load Forecast with Energy Efficiency



Where the Savings Come From





Heat Pumps as a Resource

- Higher efficiency air conditioner (AC) and heat pump (HP) measures are in the potential study developed by Applied Energy Group.
- ACs and HPs have **equal** potential efficiency in the summer.
- Cooling savings only for AC or HP = 33% potential gain

Gas Furnace to Heat Pump Conversion Barriers

- Economics
  - Initial cost
  - Increased heating costs

- An average home in our climate with a heat pump includes 5-kilowatt heat strip that comes on when outside temperatures fall below 30 degrees. This would be a significant new load.

Additional Achievable Technical Potential

1. Energy efficiency measures were bundled to provide a manageable number of energy efficiency resources for Aurora modeling.
2. Similar measures were grouped based on:
   - Load shape (measures with impacts concentrated during the summer peak and winter peak)
   - Cost
3. Ensured measure bundles were large enough to be able to affect Aurora resource decisions (megawatts, not kilowatts).

Questions or comments?