Clean Heat Standard & Electrification

Senate Natural Resources & Energy Committee | March 31, 2022

A Reliable & Resilient Grid For Customers

- Reliable, Resilient Grid Now and In the Future
  - Focus on programs and projects to accelerate the necessary carbon transformation of thermal and transportation sectors
  - Equitable transition for all customers, keeping electric rates affordable
  - More than ever important to strengthen the grid as the backbone for clean electrification

- System level tools
  - Vegetation management
  - Storm hardening and smart controls
  - Strategic undergrounding

- Service level tools
  - Transformer upgrades
  - Home, business upgrades
  - Customer Distributed Energy Resources for flexibility

Cutting Carbon & Costs: Load Management Innovation

- **Storage-integrated Cold Climate Heat Pumps (CCHP):**
  Storage helps customers through outages and through peak events
- **Integrated controls**:
  By device and through single thermostat to control CCHPs and any backup heating system
- **Smart Panels:**
  Circuit-level monitoring and management

Customers and CCHP

- **In the past three years, over 12,000 customers have installed eligible devices**
  - Many installing more than one device.
  - 2020 saw a large number of installations with 6,500 installed over the months of July-September that year alone, and progress continued in 2021

- **Continuing to support CCHP adoption is a key strategy for meeting our Tier III goals, cutting carbon emissions and costs for customers**

- **Important for continued progress, overall carbon reduction and affordability that Tier III not conflict with or create greater costs/burdens for customers if CHS is adopted**

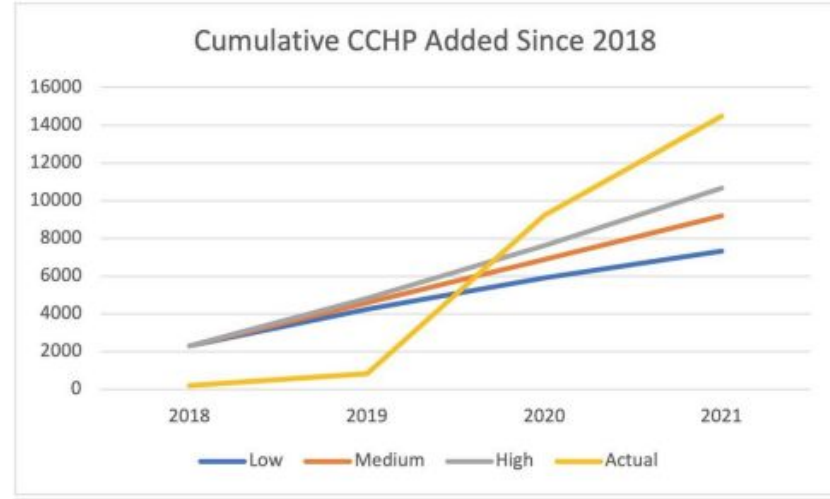
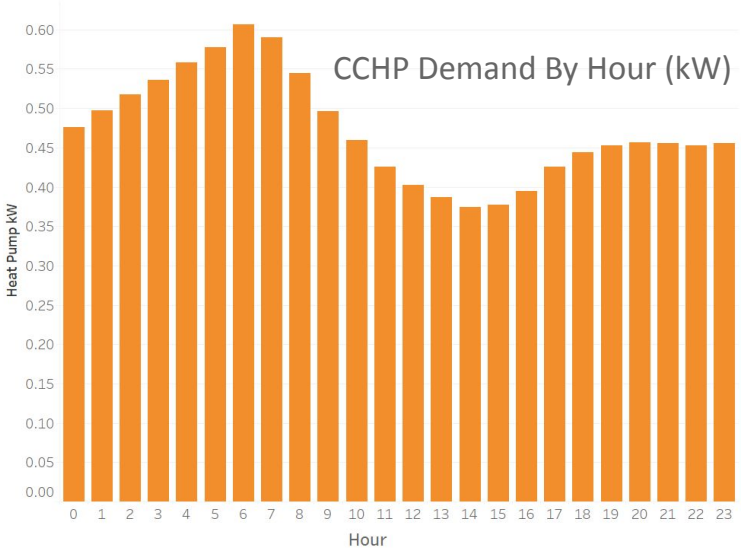


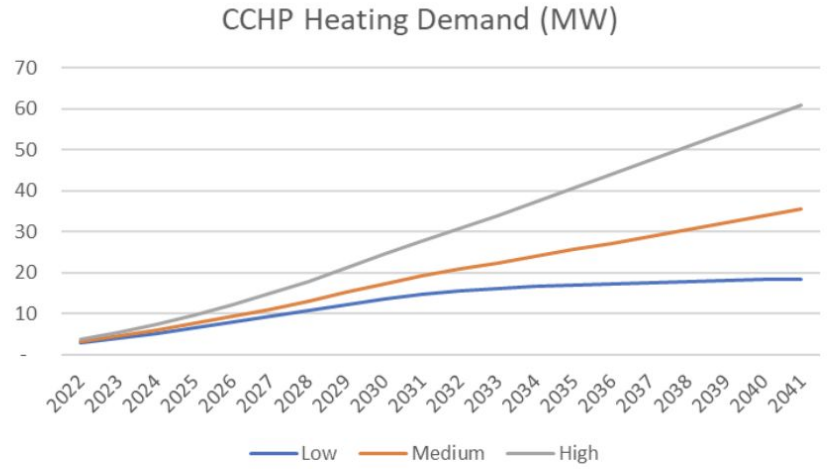
Figure 2-7. Cumulative Cold Climate Heat Pumps Added Since 2018

Source: GMP's 2021 Integrated Resource Plan

CCHP Into the Future

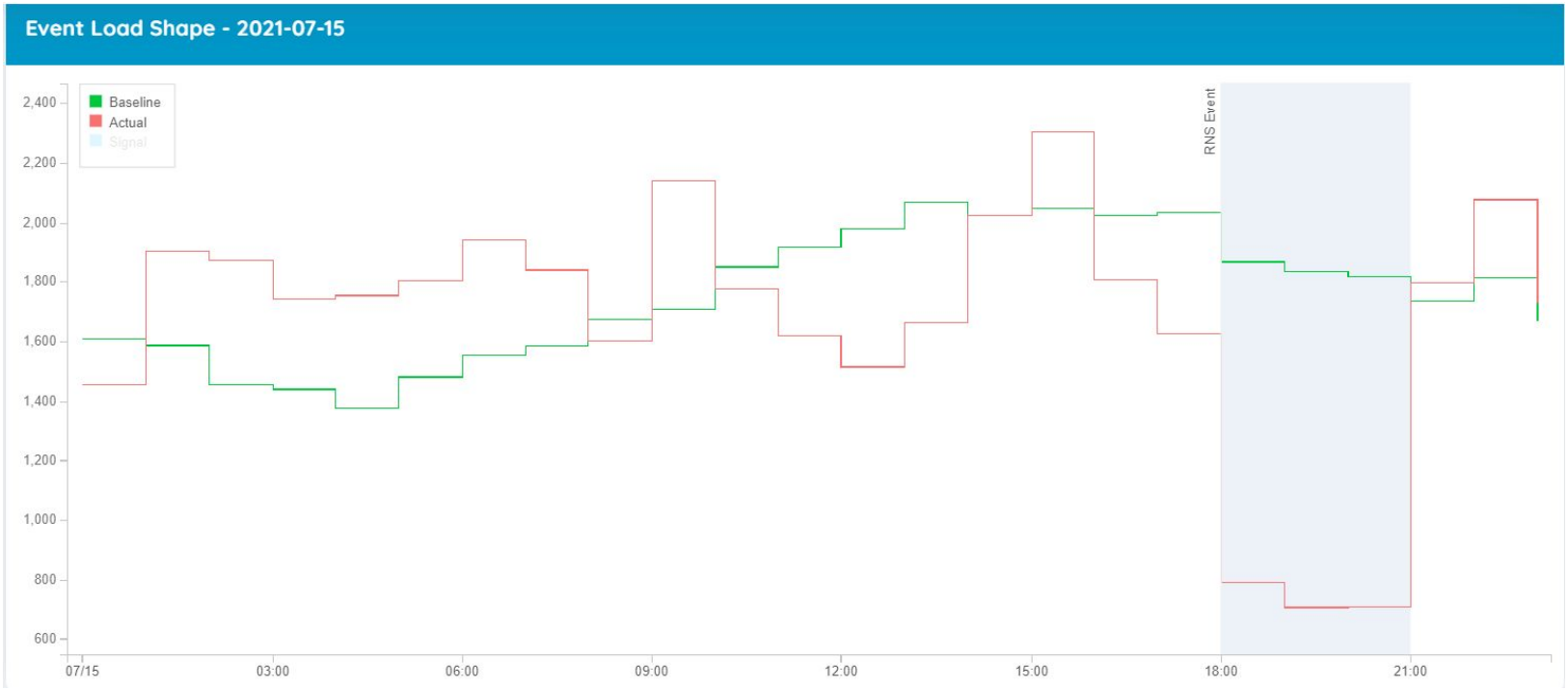
- Even in high adoption scenario (over 200,000 systems by 2040), CCHP additional electric demand is modest
- Winter heating demand for CCHP is significantly higher (2X-3X) than summer cooling
- Key to continue to lead and work on ways to meet and manage high demand periods
  - For context, GMP has ~30MW storage already online





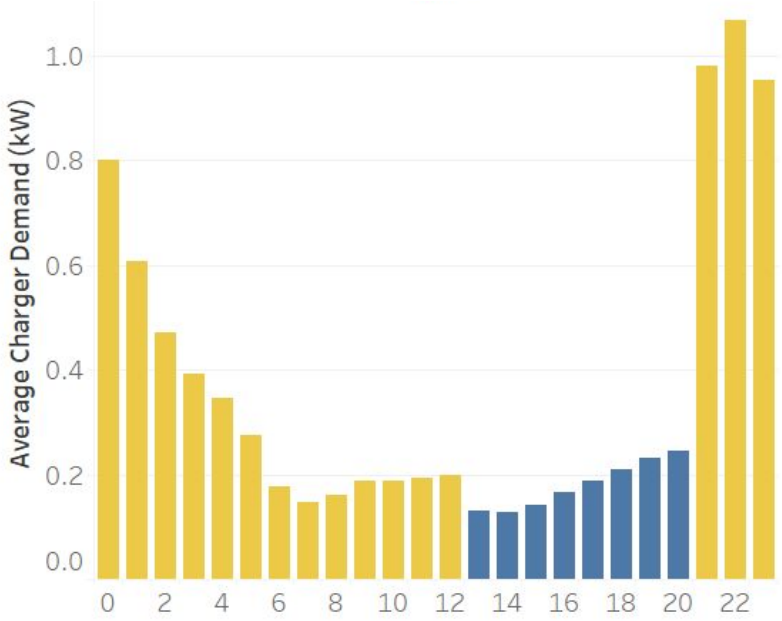
Source: GMP's 2021 Integrated Resource Plan

Flexibility In Action



Example of Flexible Load Management Through Onsite Controls

Flexibility In Action



Example of EV Charging - Customer Participation in Management