

# **GMP FOCUS ON CARBON**

January 23, 2019

## OFFSETTING FOSSIL FUELS

- ▶ Residential
  - ▶ Heat Pumps
  - ▶ Heat Pump Hot Water
  - ▶ Storage
- ▶ Transportation
  - ▶ Commercial and private on- and off-road vehicles
  - ▶ Residential, Workplace, and Public Charging
- ▶ Commercial and Industrial – Custom Projects
  - ▶ Air/Water/Process heating and cooling, generators, compressors, heat recapture, etc.
- ▶ Load management implemented wherever feasible
- ▶ Partnered with Efficiency Vermont, integrators, engineers, and energy consultants

## LONG WIND FARM

- ▶ *Long Wind Farms is a greenhouse in Thetford, Vermont. They grow organic tomatoes year-round in a greenhouse that covers approximately 2 acres.*

### Before:

- Heating the greenhouse, particularly in the winter uses a large amount of propane in hydronic heating loops
- Over 200,000 gallons of propane per year



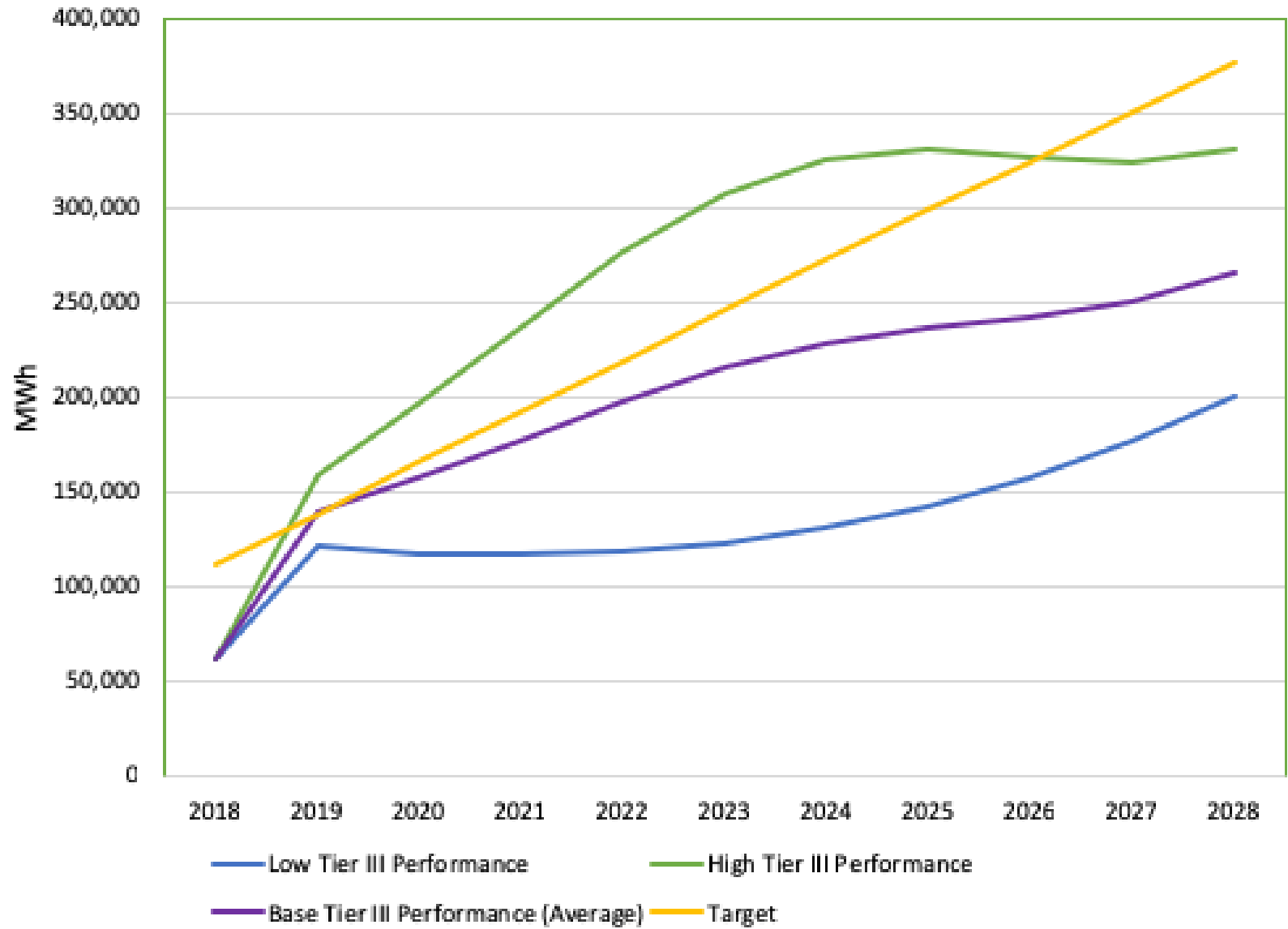
### Opportunity:

- Collaborate with GMP, Efficiency Vermont, and engineering firm
- Opportunity:
  - HPS lighting generates both light and heat
  - Light- and heat-insulating curtain amplifies efficiency

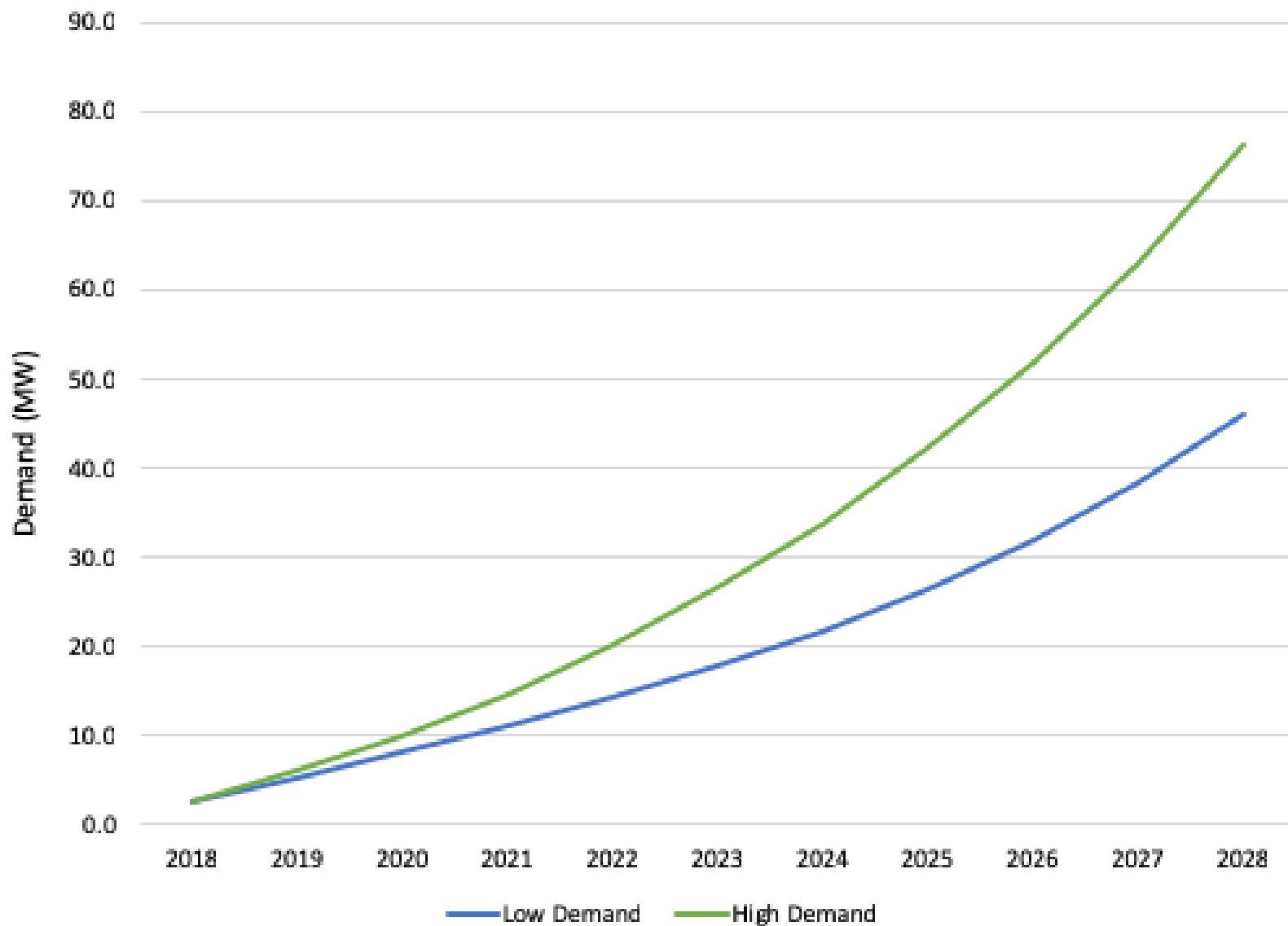
### After (forecasted):

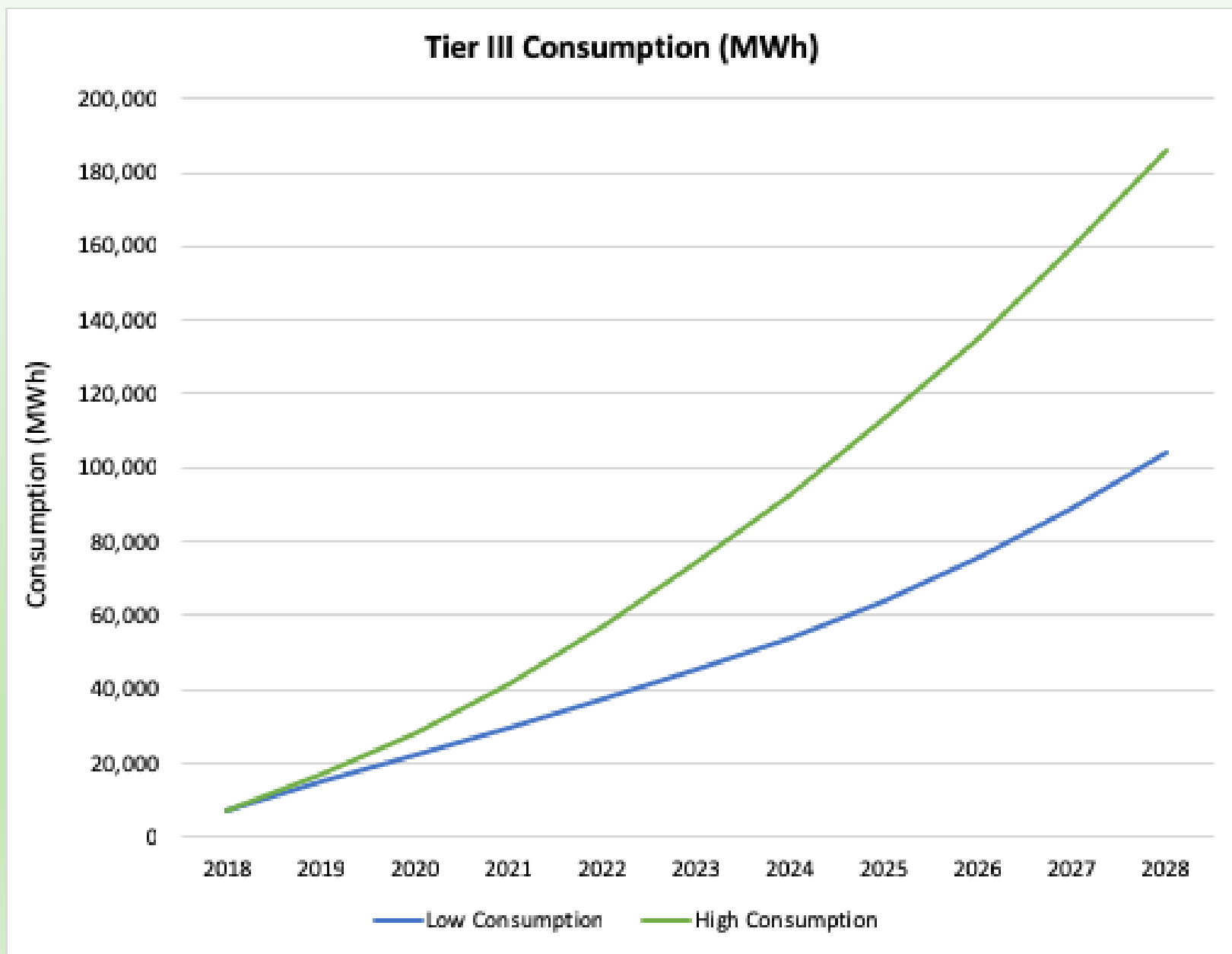
- ✓ GMP contributed to the cost of lighting
- ✓ Efficiency Vermont contributed to the cost of the curtain
- ✓ Combined project will offset 42,500 gallons of propane each year
  - ✓ 22,500 gallons for the lighting and 20,000 for the curtain
- ✓ Increase greenhouse productivity by 20%
- ✓ Lifetime Carbon Offset: 8.2 million lbs.
- ✓ GMP Cost Per MWH: ~\$10.00
- ✓ Tier 3 claim: 2,410 MWH

### Tier III Performance



### Tier III Demand (MW)





### Tier III Cumulative Carbon Offset

