Presentation Objective

Discuss system demand; system capacity; how they relate to each other; and the effect individuals have on the system

1. Member demand is outgrowing system capacity

2. Status of our system today

3. Mazama Feeder Upgrade Options

4. Demand Control / Demand Response

1. Member Demand Is Outgrowing System Capacity

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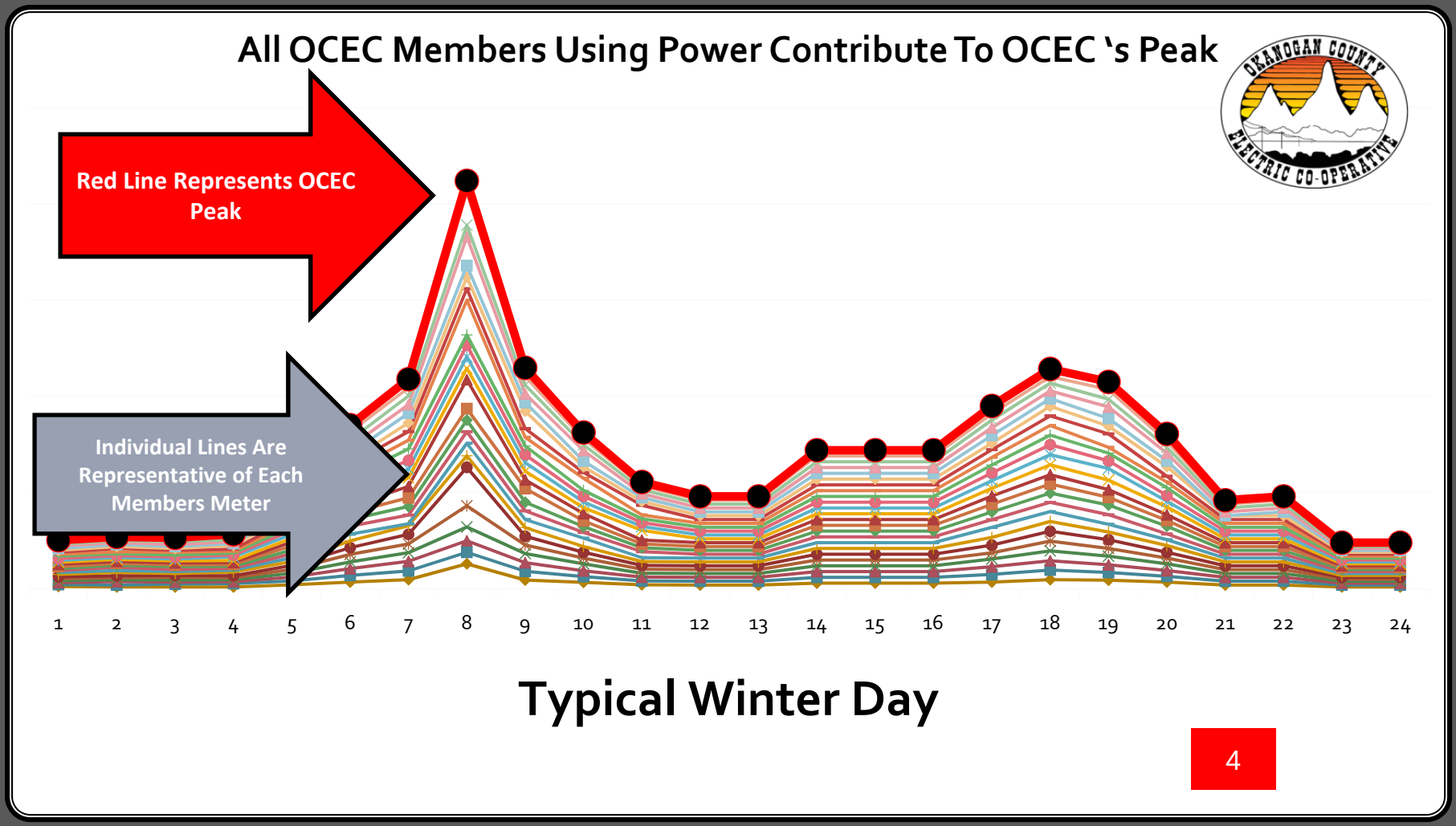
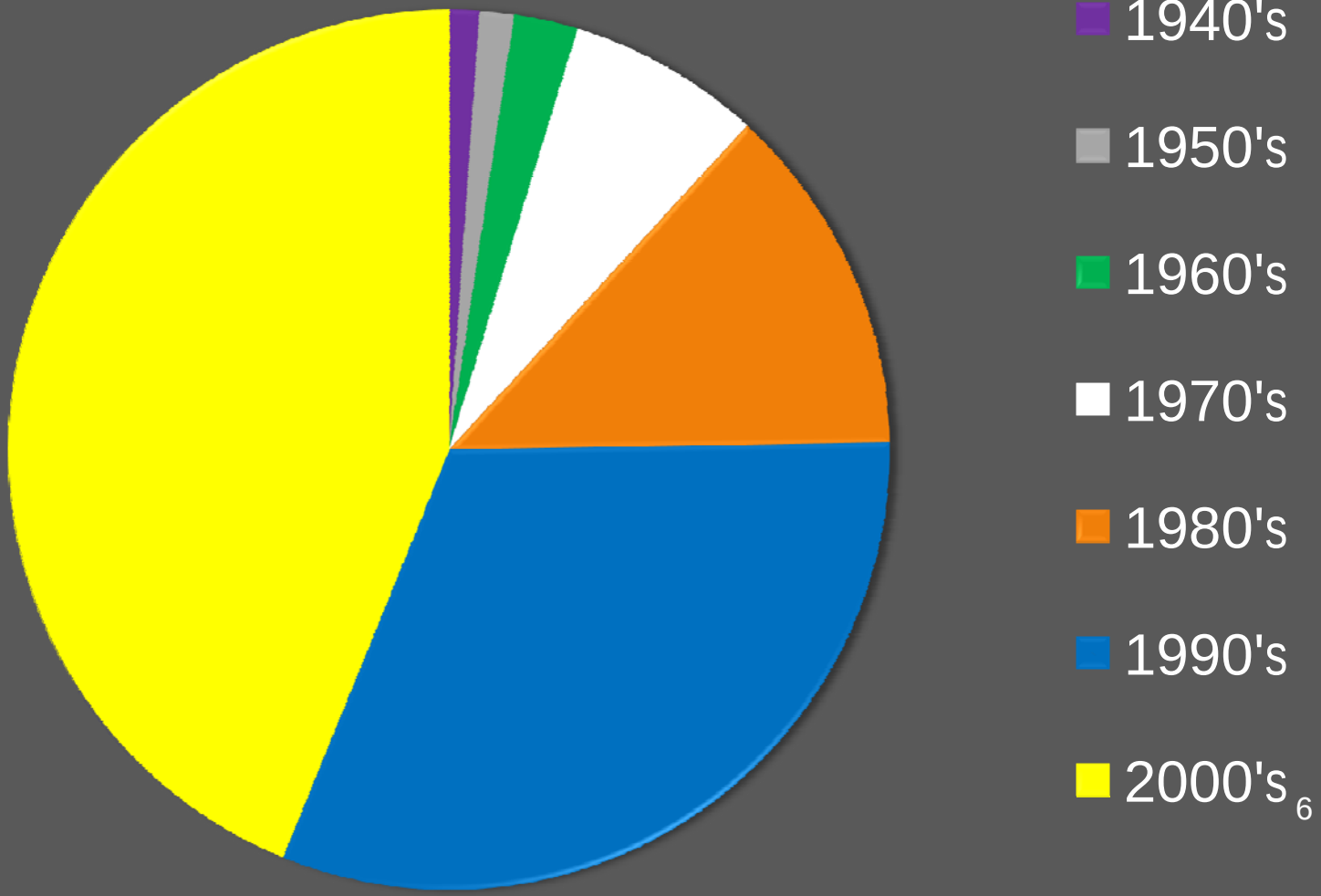


1. Member Demand Is Outgrowing System Capacity

- OCEC is required by Federal and State Law, as well as OCEC Policy, to provide safe and reliable electricity to residents in our service area

- OCEC has to build to potential peak demands
  - -Frequency of peak is not the issue – once is all it takes
  - -Actual peak is a once a year occurrence, individually and system wide
- BPA Winthrop Substation peak demand is within 85% of substation capacity

Services Still Active



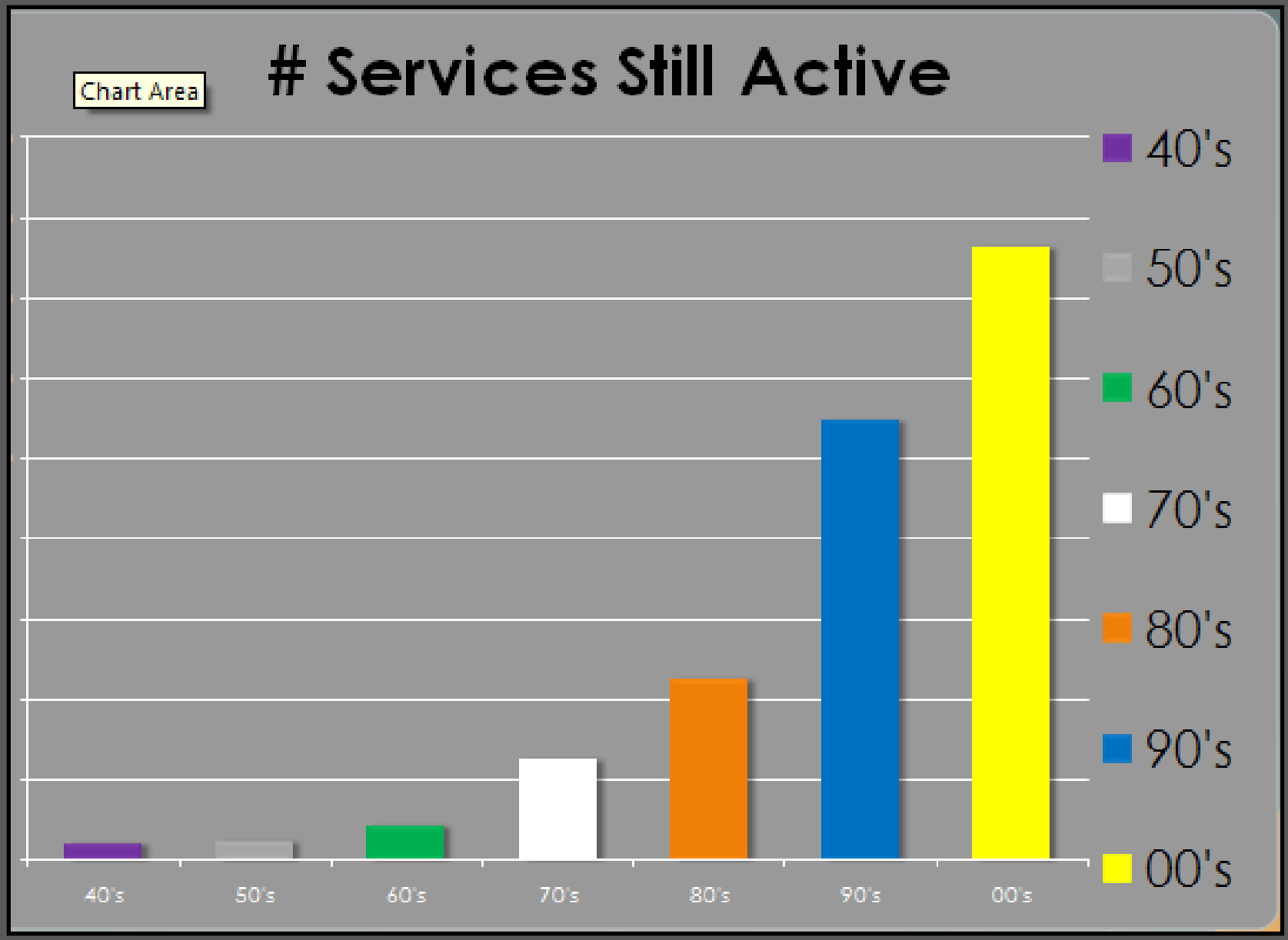


Chart Area
Services Still Active
40's
50's
60's
70's
80's
90's
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40's
50's
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80's
90's
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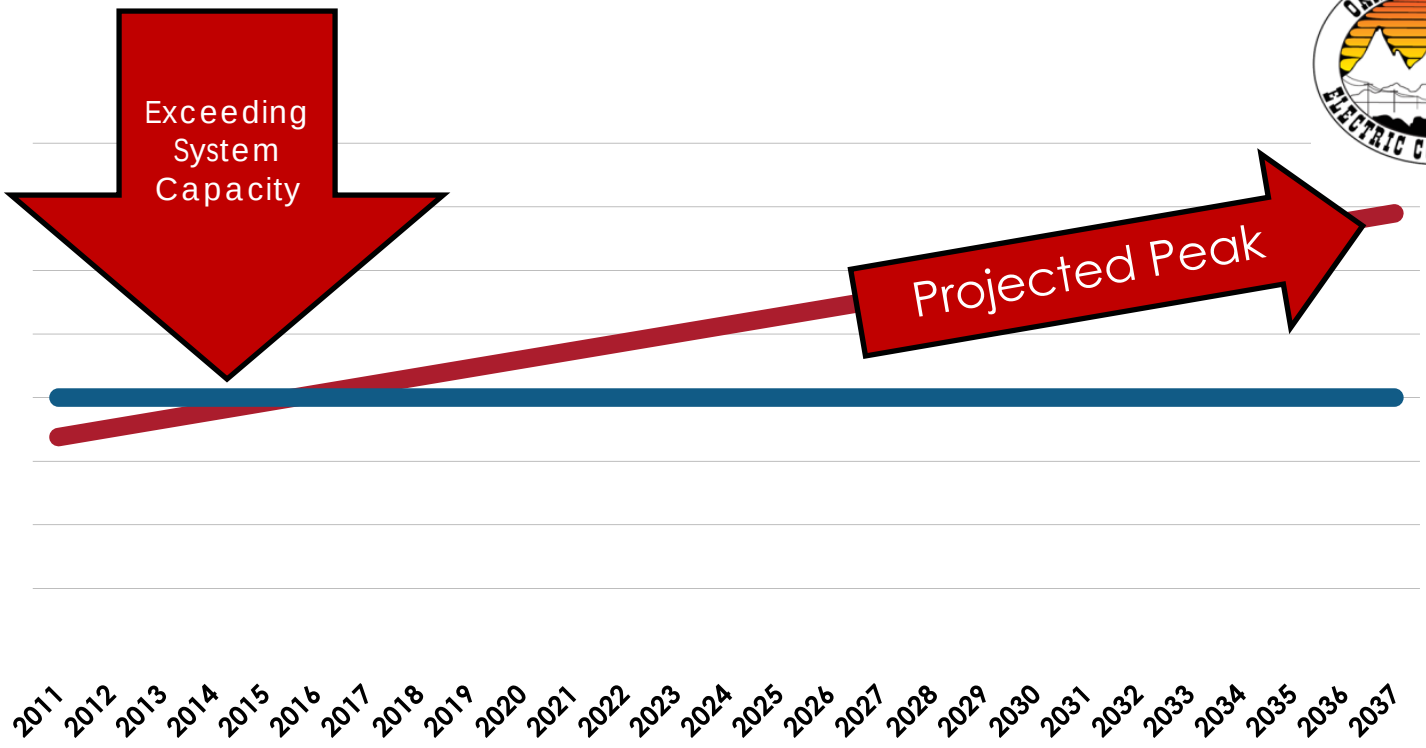
1. Member Demand Is Outgrowing System Capacity



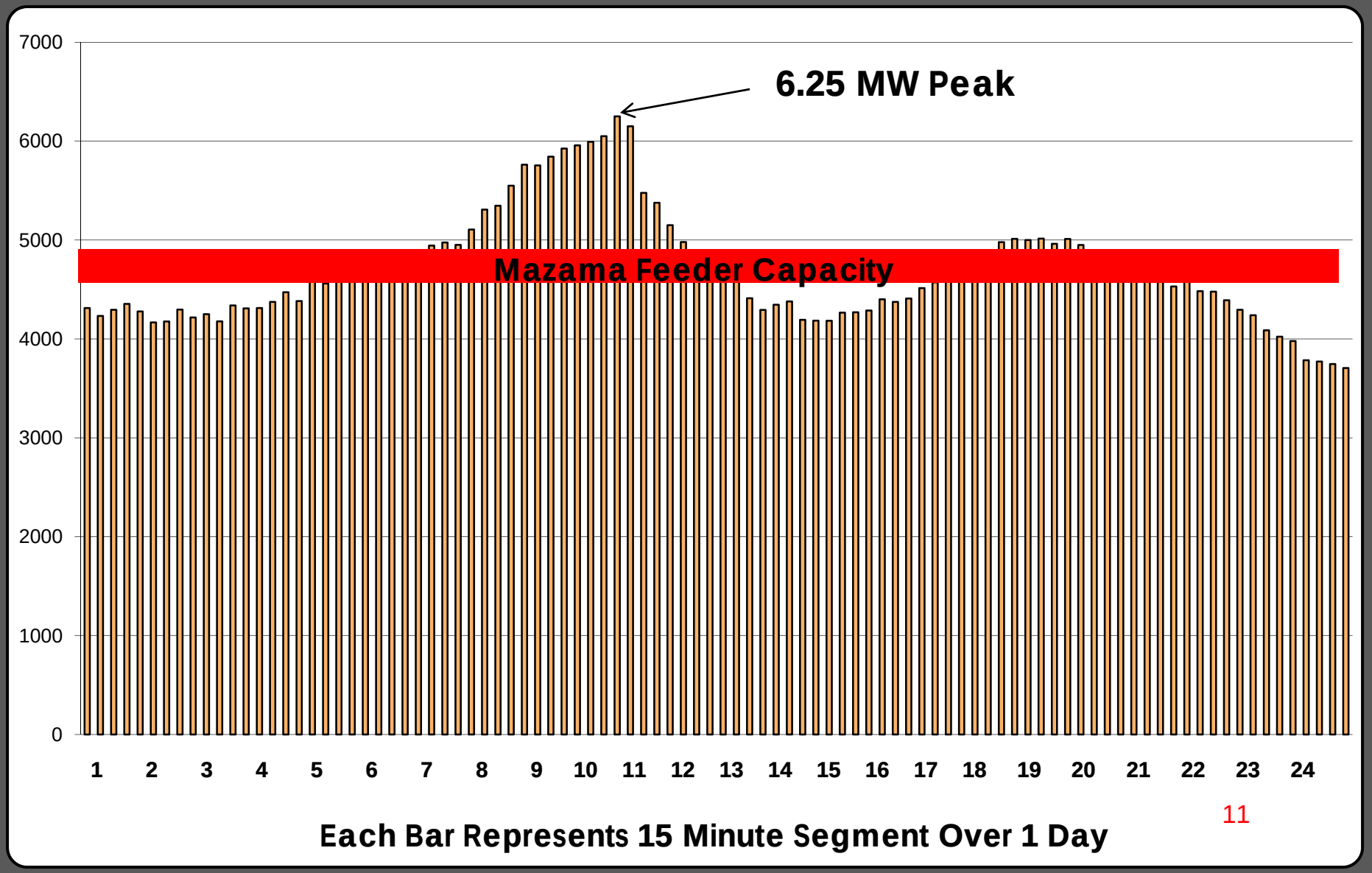
Next 25 Years

2. Status of Mazama Feeder Today

2. Status of Mazama Feeder Today

- Mazama Feeder capacity is 4.85 MW @ .97 PF
- Mazama Feeder hit a new system peak on 1/1/2011 @ 9:00 am of 6.25 MW (15 min)
  - Went over 4.85 MW Capacity 93 Times in 4 day period
- If the Mazama Feeder is not upgraded there will be a blackout
  - Prolonged outages
  - Cold load pickup

2. Status of Mazama Feeder Today



3. Mazama Build Out Options

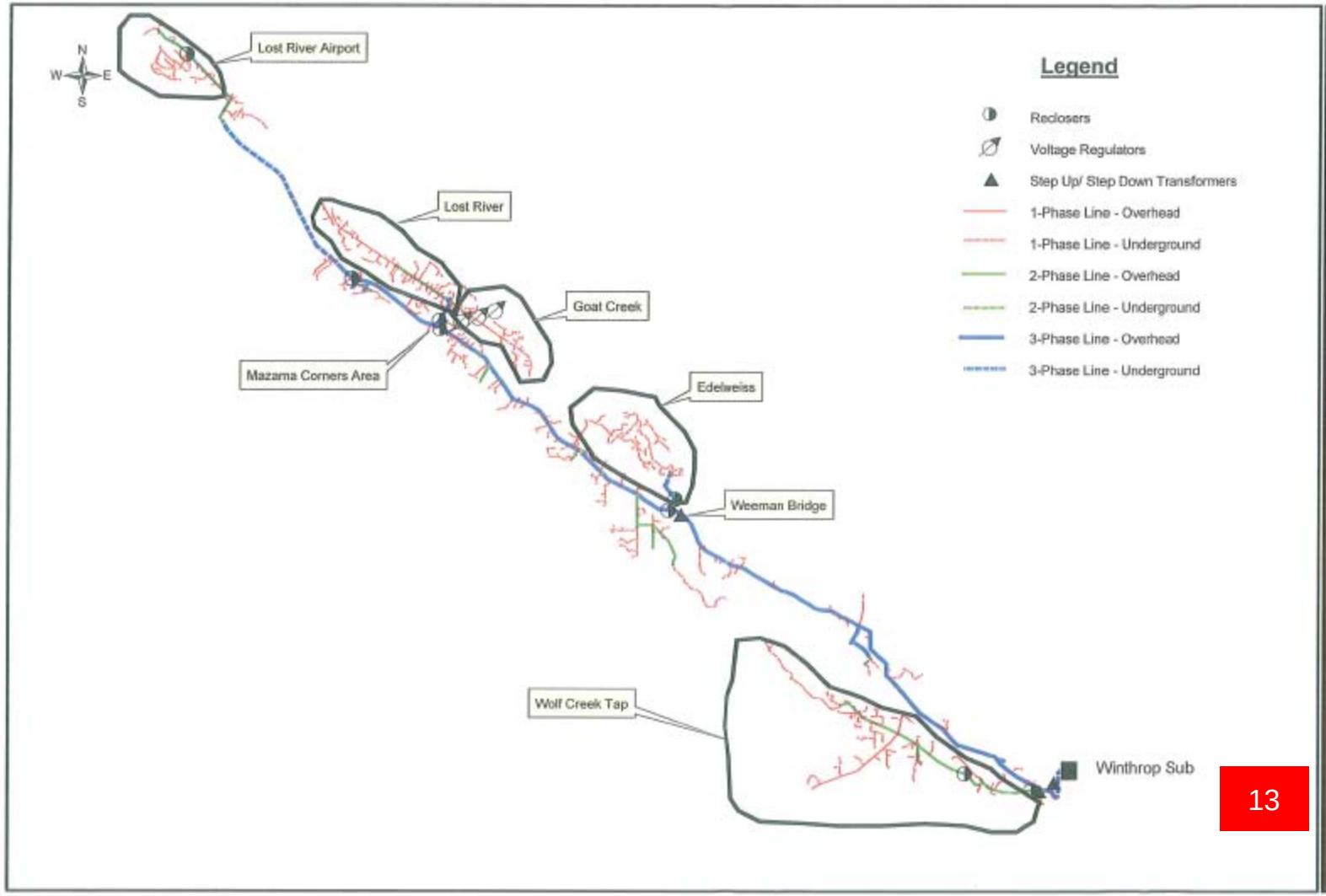
Interwest Engineering Load Study provides 3 options for increasing the Mazama Feeder capacity by a minimum of 10 MW

Option 1: 115 KV $9,000,000 / $900 per KW

Option 2: 24.9 KV Express $7,880,000 / $788 per KW

Option 3: 34.5 KV Express $9,500,000 / $950 per KW

3. Mazama Areas



4. Demand Response / Demand Control

- Demand Response / Demand Control devices are methods to reduce peak system demand
- Demand Response / Control units are not THE solution to capacity problems
- Within the industry Demand Response & Demand Control is considered as part of the total strategy addressing system capacity



4. Demand Response / Demand Control

Pilot Program Criteria

- **Lower Individual Demand to reduce system capacity problems**

- **Provide the members tools to manage kW on their bill**

- **Technology should have a minimal impact on member's lifestyle to encourage long-term participation**

4. Options Considered

- **Demand Control**

- **Demand Response**

Demand Control

Kootenai EC / OPALCO Pilot

Kootenai Electric Co-Op is currently conducting a Pilot with BPA and will be sharing the results.

- **Utility shuts off major appliances when reaching capacity (H20 Heater, Heat)**
- **Will help manage Cold Load Pickup**
- **Has automatic voltage and frequency limits which attempts to automatically maintain system integrity**
- **Integrates with our existing AMI**
- **Members will notice control**

ACLARA DRU



Water & Space Heating Control





Member Demand Response

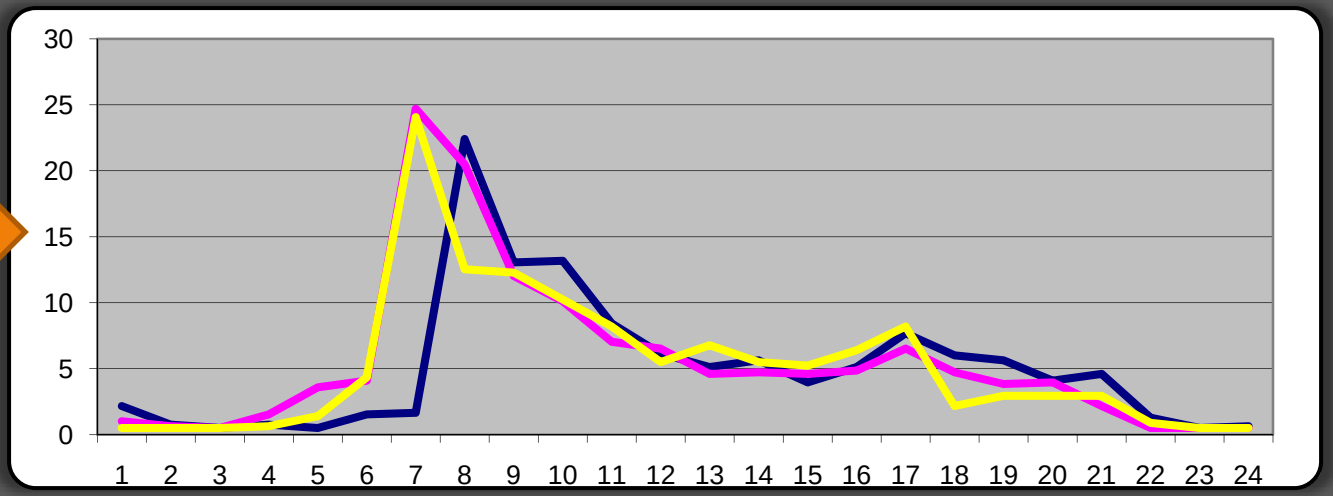
OCEC's Pilot

- Member decides level of control, with minimum or no change in lifestyle
  - -Cost saving on bill is determined by level of control
  - -Custom to each house's electrical design
  - -Member is part of the solution to reduce system demand
  - -In the future could be controlled by the Co-Op, with the added use of the DRU
- Helps to control cold load pick-up
- System peak reduction (flattens peak)
- Expensive (Avg cost with installation = $1,400)
- Tests show that Energy Sentry sheds 15% - 60% of its 15 minute peak in a household (15 minute interval peak is the number that utilities use for capacity build-out)

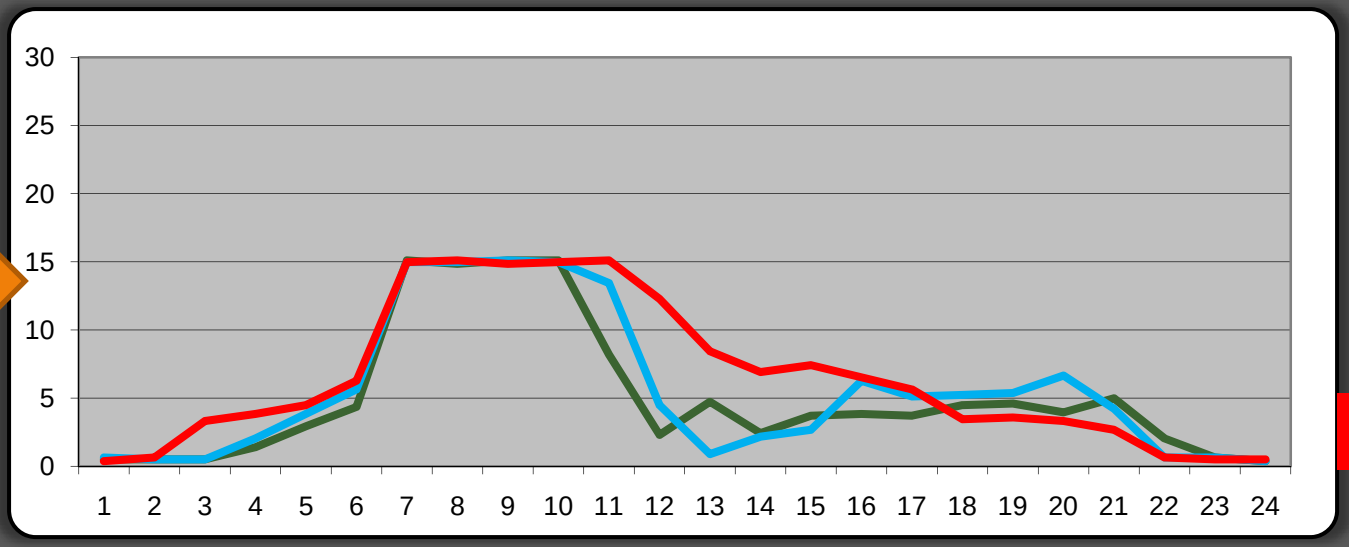


Examples of Installations Before & After Demand Response

Before Demand Response

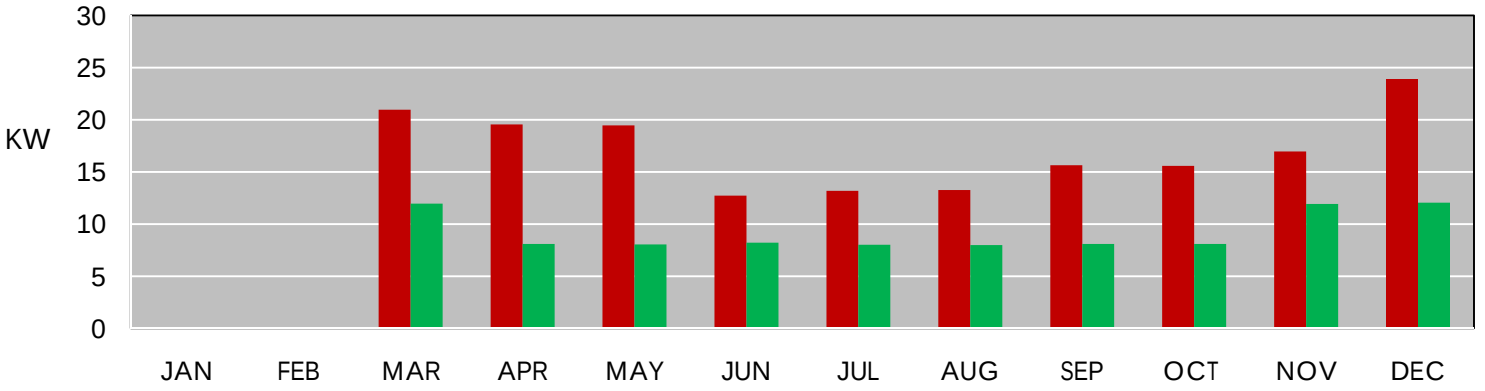


After Demand Response



Examples of Members Using Demand Response

Member A BILLED KW

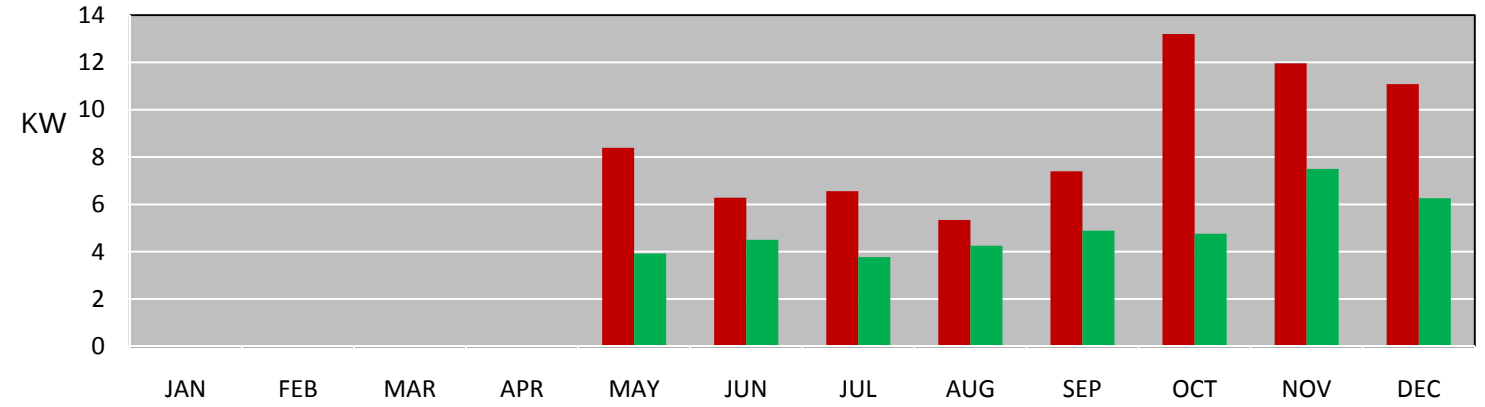


Before Demand Response = $462

After Demand Response = $249

Member Saved $212.64

Member B BILLED KW

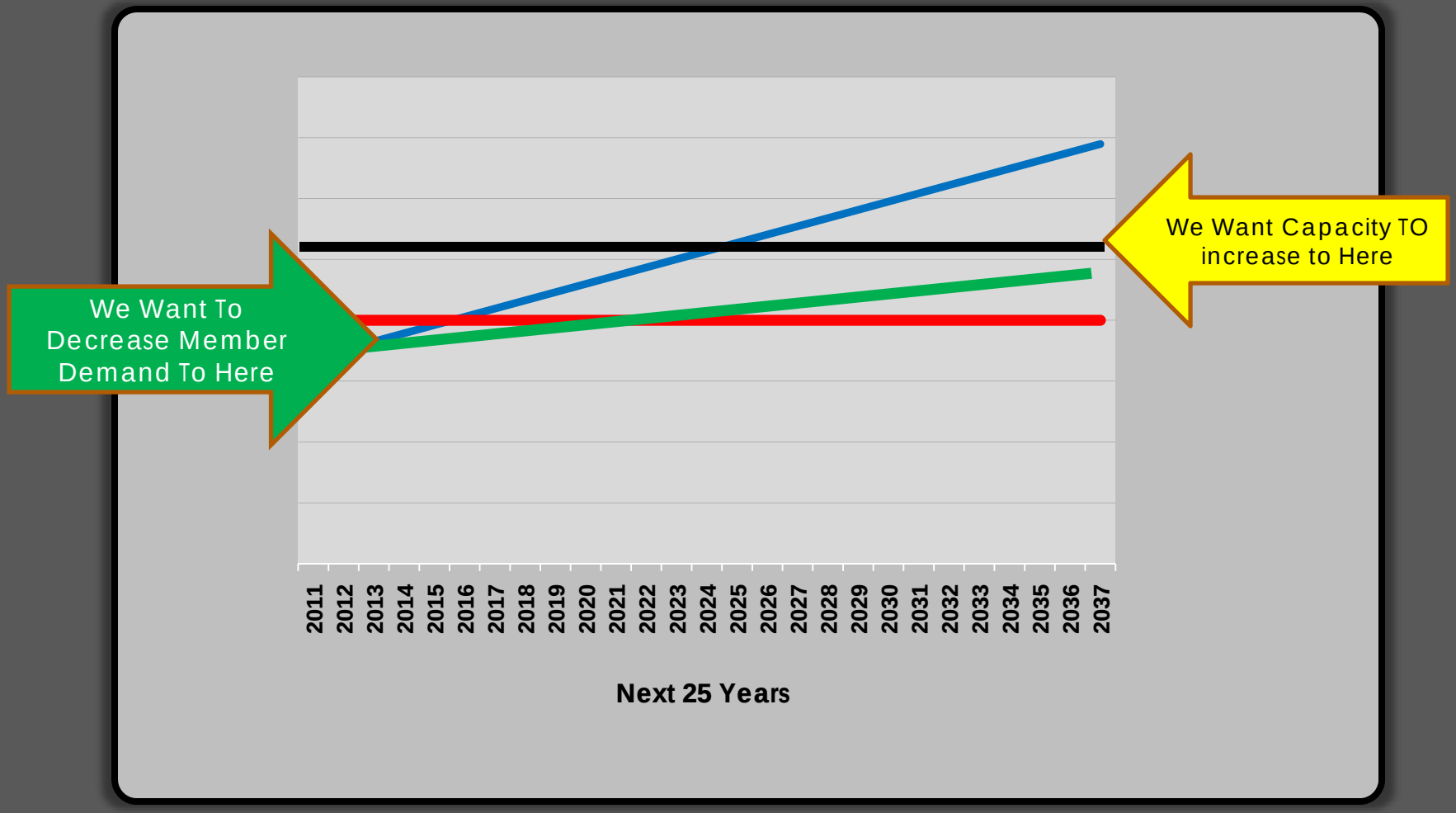


Before Demand Response = $189

After Demand Response = $107

Member Saved $72.00

Summary


We Want To Decrease Member Demand To Here
We Want Capacity TO increase to Here
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
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2027
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2029
2030
2031
2032
2033
2034
2035
2036
2037
Next 25 Years

Summary

MAZAMA UPGRADE OPTIONS COST PER KW ADDED

Option 1: 115 KV

$9,000,000 / $900 per KW

Option 2: 24.9 KV Express

$7,880,000 / $788 per KW

Option 3: 34.5 KV Express

$9,500,000 / $950 per KW

Reports show utilities are paying between:

$150 and $400 per KW

For conservation or demand response / control programs.

PROJECTED COST OF SHED KW WITH DEMAND RESPONSE

Cost of shed KW based on the 2 Test Pilots (Member A & B)

Member A Shed 10 KW

= $140 Per KW

Member B Shed 4 KW

= $350 Per KW

Summary

- **Mazama Feeder upgrades are required**
  Mazama Feeder upgrades can be phased in over time

- **Demand Response units can help reduce peak demand**

- **Demand Control units can help reduce peak demand**

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