Bonneville
POWER ADMINISTRATION

# Draft BPA Conservation Potential Assessment Results

March 15, 2018

# Agenda!

- Let's start!
- Methodology
- Key Findings
- Sector Savings Potential
- Q&A and Next Steps

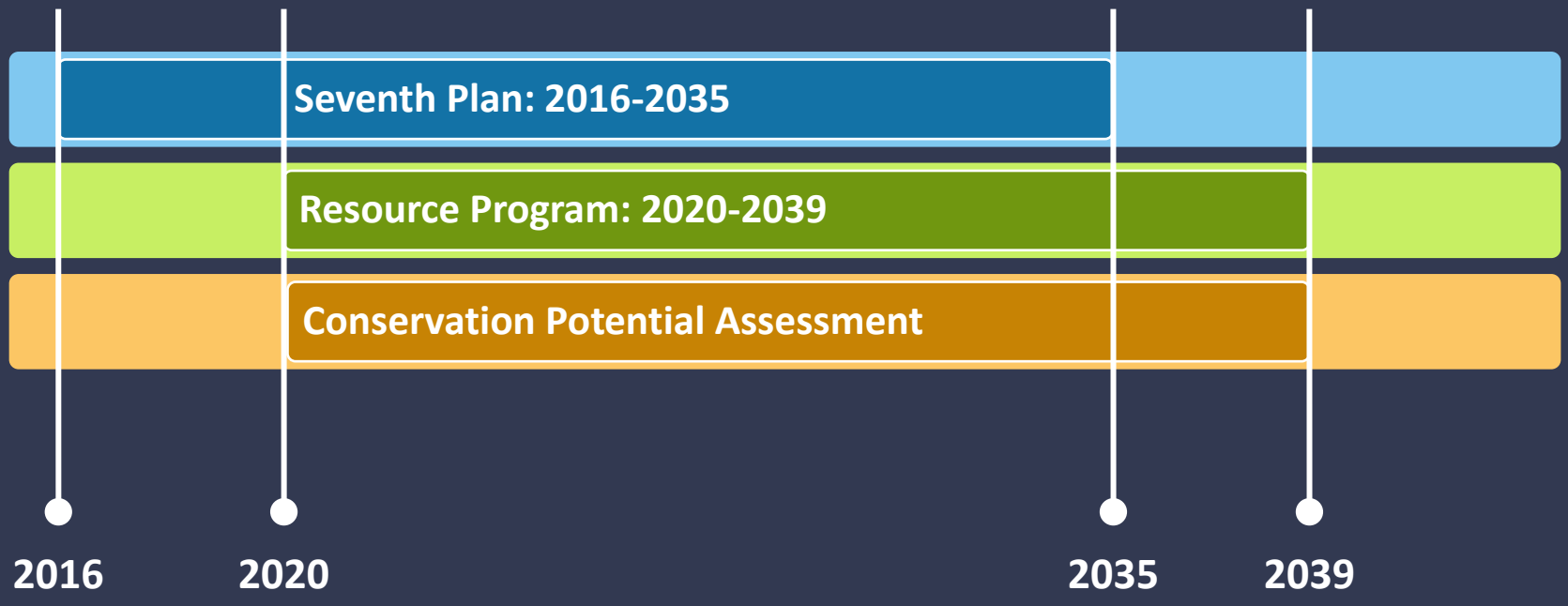
# 1 STUDY: 2 GOALS

1. How does EE potential in BPA's service territory compare to 42% of the 7th Plan?

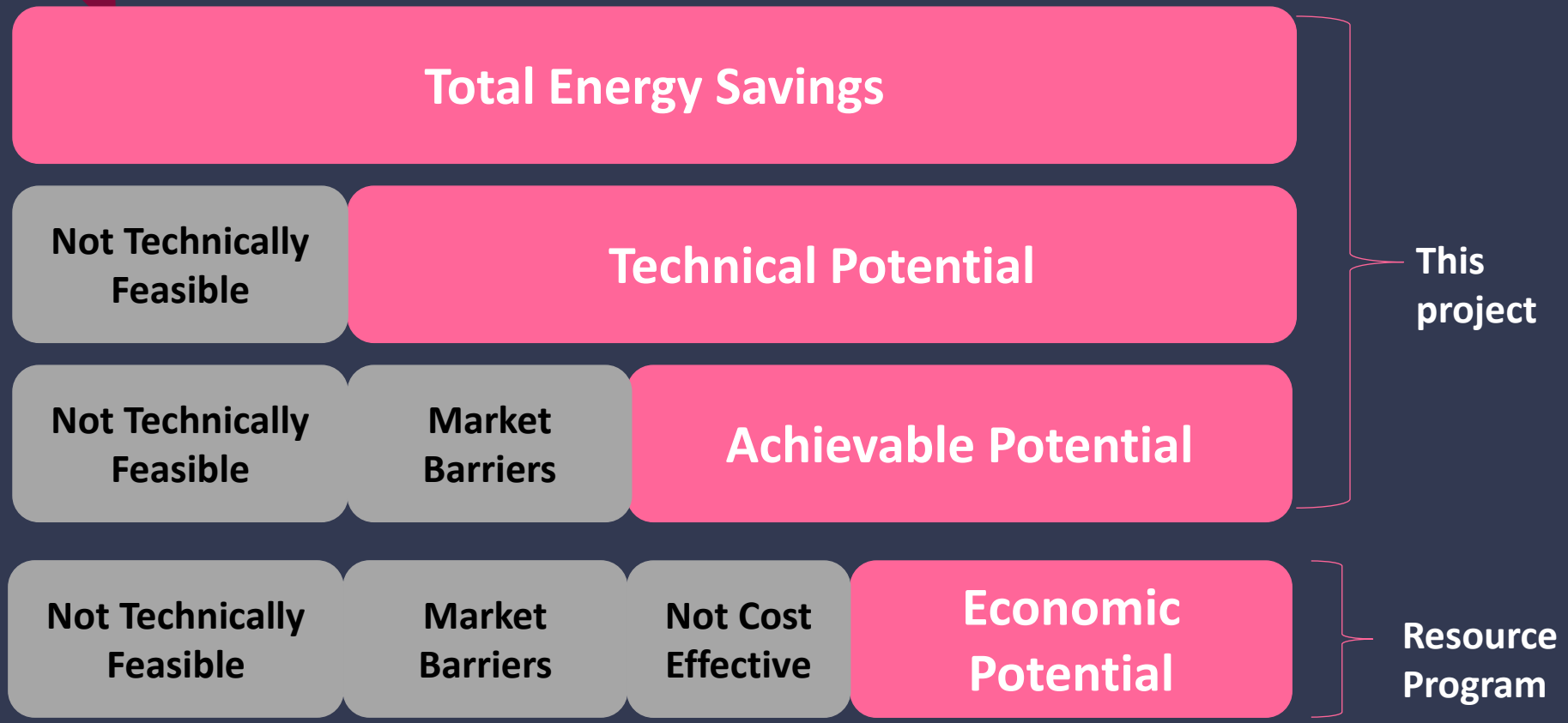
2. What achievable energy efficiency is available for the BPA Resource Program?

*The team decided to focus on goal #2, leaving it difficult to compare to the 42%*

# STUDY HORIZON



# DEFINITIONS OF POTENTIAL



# METHODOLOGY

7th Plan
Achievable Potential
2016-2035

# 2016-2019 Achieved Savings

New Codes and Standards Approved Since 2015

2016-2019 Achieved Savings

Expired Measures and Measure Changes

New Codes and Standards Approved Since 2015

2016-2019 Achieved Savings

New Measures  and Measure Changes since 2015

Expired Measures and Measure Changes

New Codes and Standards Approved Since 2015

2016-2019 Achieved Savings

New Measures  and Measure Changes since 2015

Of these savings, how much is within BPA's service territory?

Expired Measures and Measure Changes

New Codes and Standards Approved Since 2015

2016-2019 Achieved Savings

New Measures and Measure Changes since 2015

Fuel saturations

Number of Homes

Of these savings, how much is within BPA's service territory?

Acres

Sales

Square footage

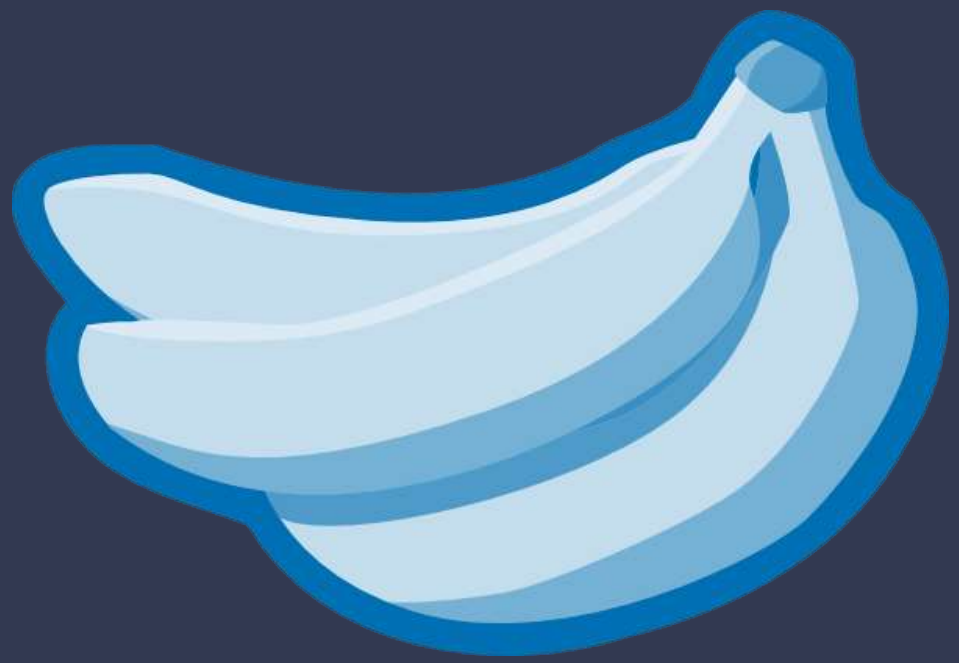
End Use Saturations

Expired Measures and Measure Changes

New Codes and Standards Approved Since 2015

2016-2019 Achieved Savings

# ALIGNMENT WITH THE 7th PLAN



# Disclaimers

- Results of this assessment are not intended to be compared to the Seventh Power Plan. This study is based on different timelines, baselines, and measures.

- Results reflect only achievable potential. Economic potential will be determined in the BPA Resource Program.

# Results

(Finally)

# Key Findings

3

- We identified a significant amount of inexpensive energy efficiency

2

- We look slightly different from the region

1

- The results were mostly as we expected



Draft - For Discussion Purposes Only

# A Few Things We Learned about Public Power

**01** We have more electric heating load

**02** We have 38% of all single family homes

**03** We have 36% of all commercial sq footage

**04** We have 48% of the industrial sales

**05** We have 34% of all irrigated acres

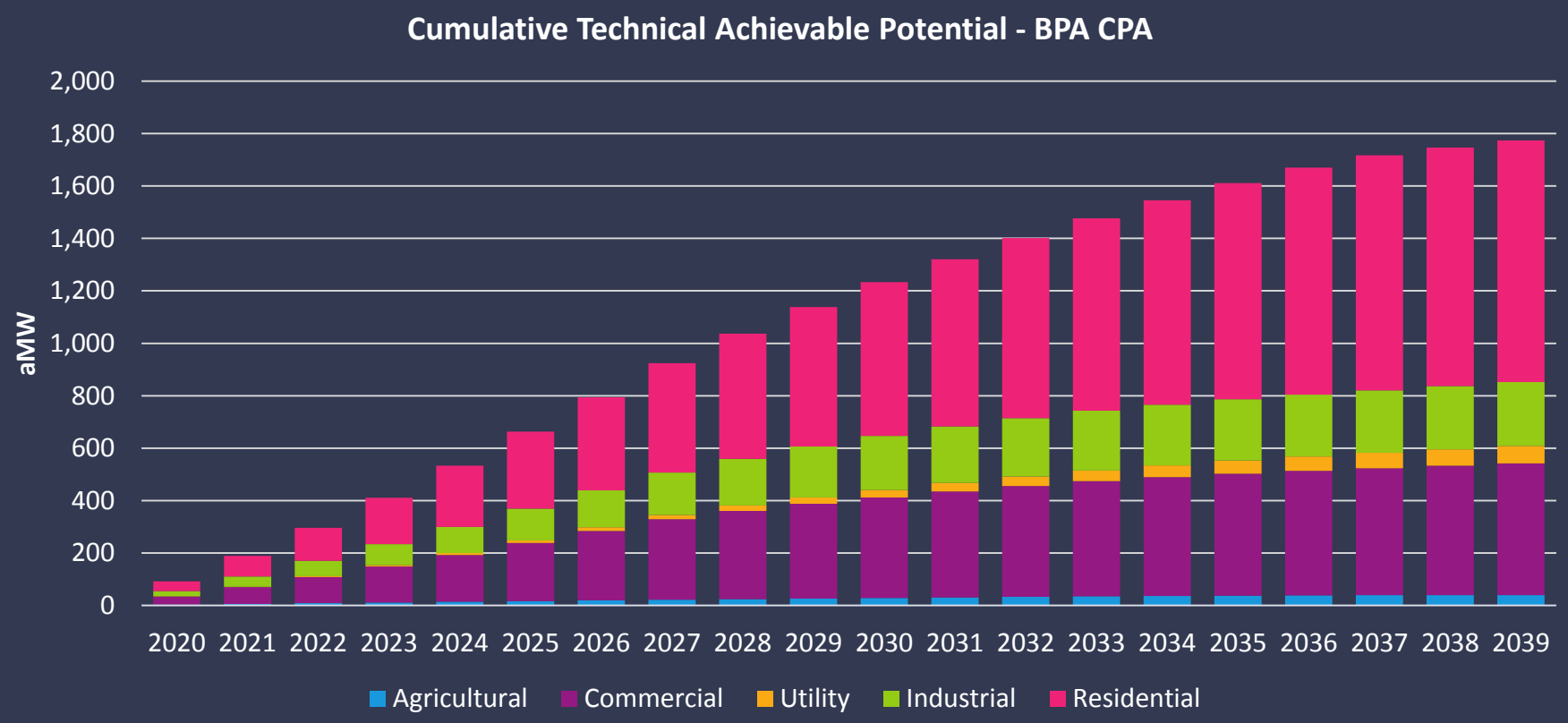
**06** We have 30% of substations > 40,000 MWh

# TOTAL CUMULATIVE POTENTIAL

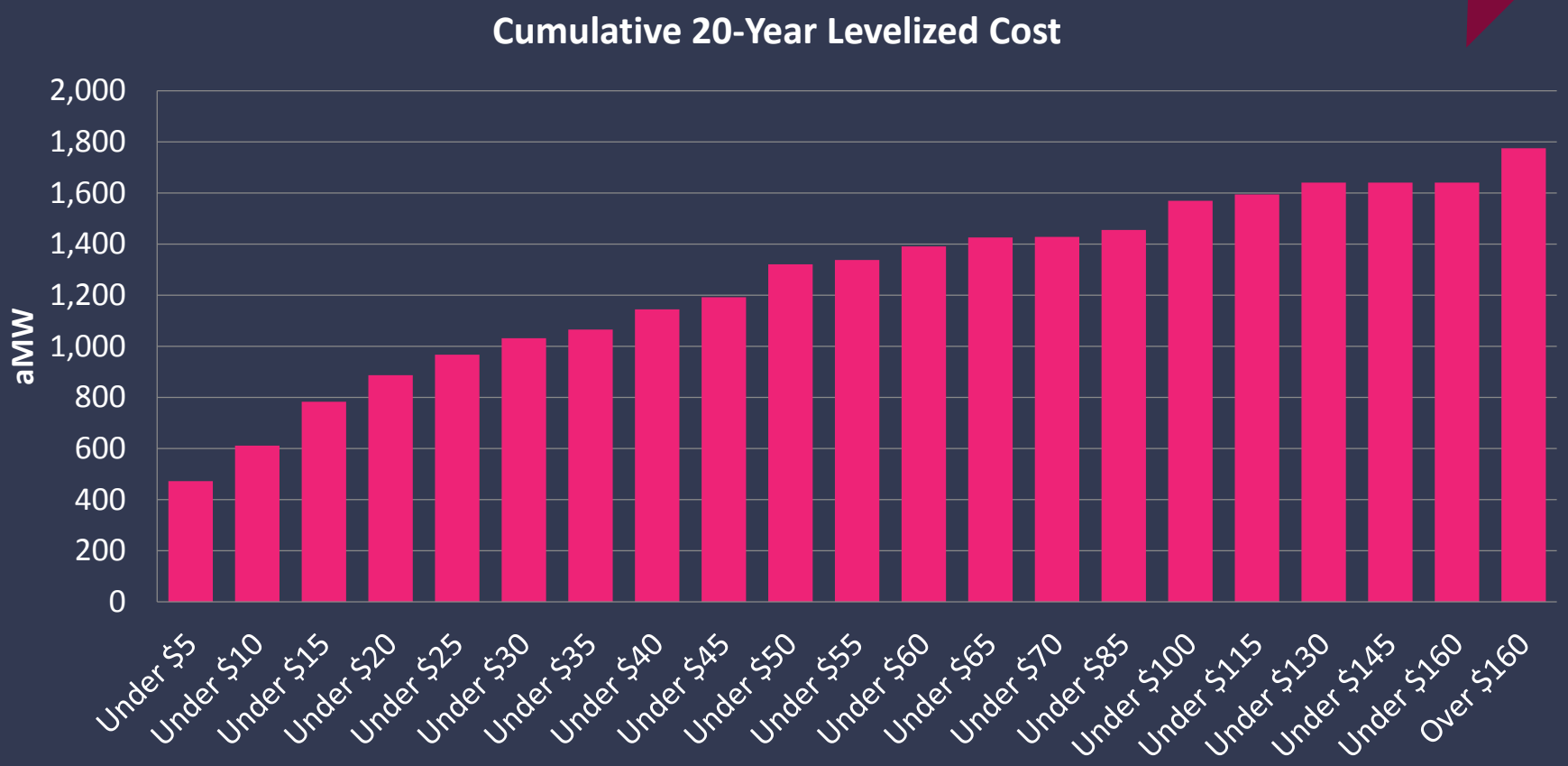
| 20 Year Cumulative Savings Potential | | |
|---|---|---|
| **Sector** | **aMW** | **% of Total Potential** |
| Agriculture | 39 | 2% |
| Commercial | 502 | 28% |
| Utility | 67 | 4% |
| Industrial* | 243 | 14% |
| Residential | 923 | 52% |
| **Total** | **1,775** | |

**Excludes new large single loads*

# 20-YEAR CUMULATIVE POTENTIAL



# SUPPLY CURVE

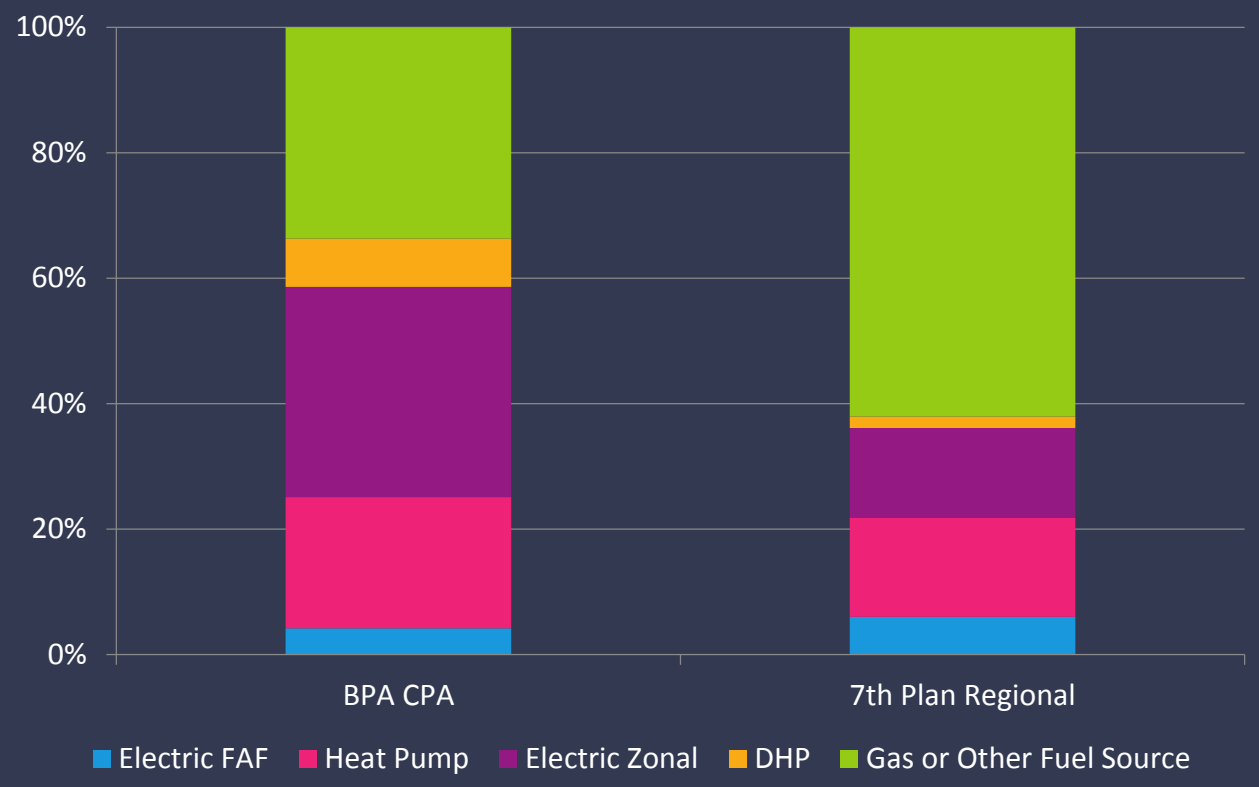


# Residential

# Residential Summary

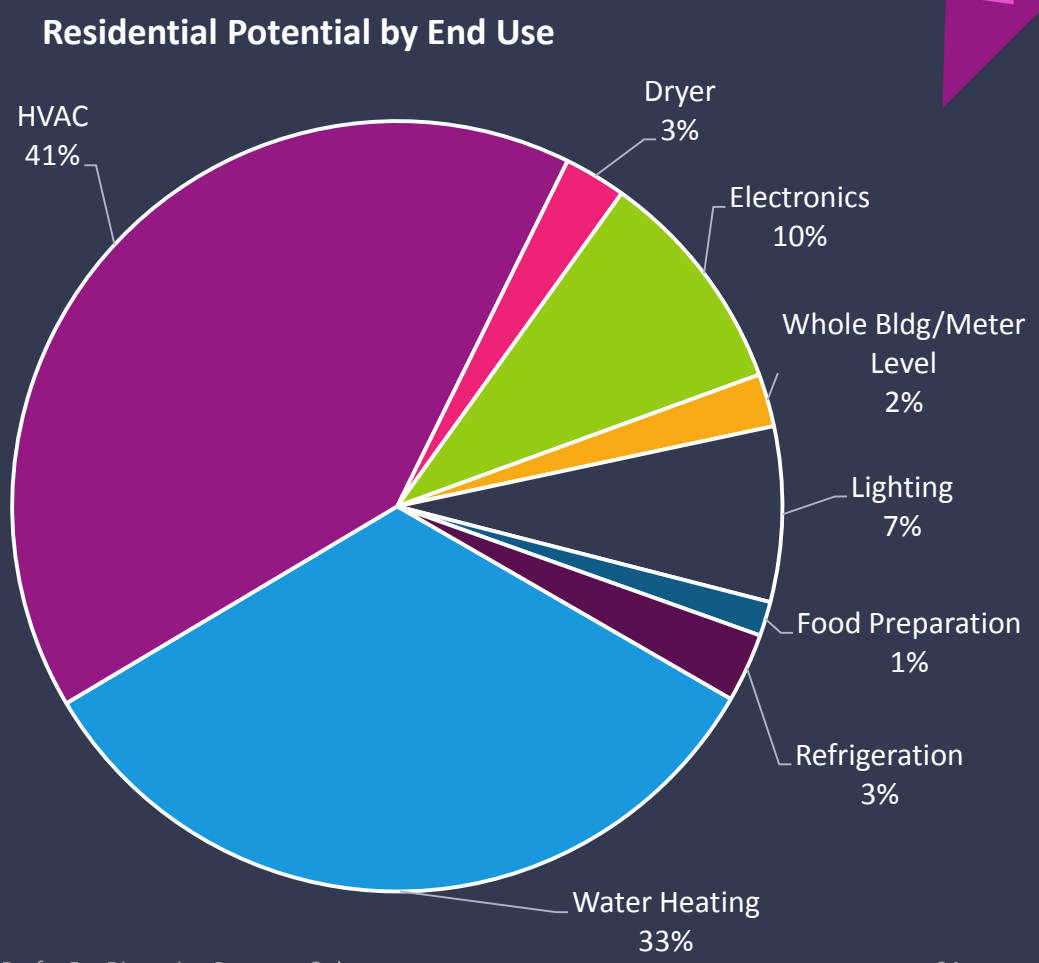
- Residential characteristics compared to the region:
  - Higher saturation of electric heat
  - Higher saturation of electric water heat
  - Fewer number of single family homes (compared to 42% of all homes)
- Measure Changes:
  - Measures updates from RTF results in both increases and decreases to per unit savings
  - Lighting standard beginning in 2020 accounted for, reducing lighting potential

# SINGLE FAMILY ELECTRIC HEATING TYPES

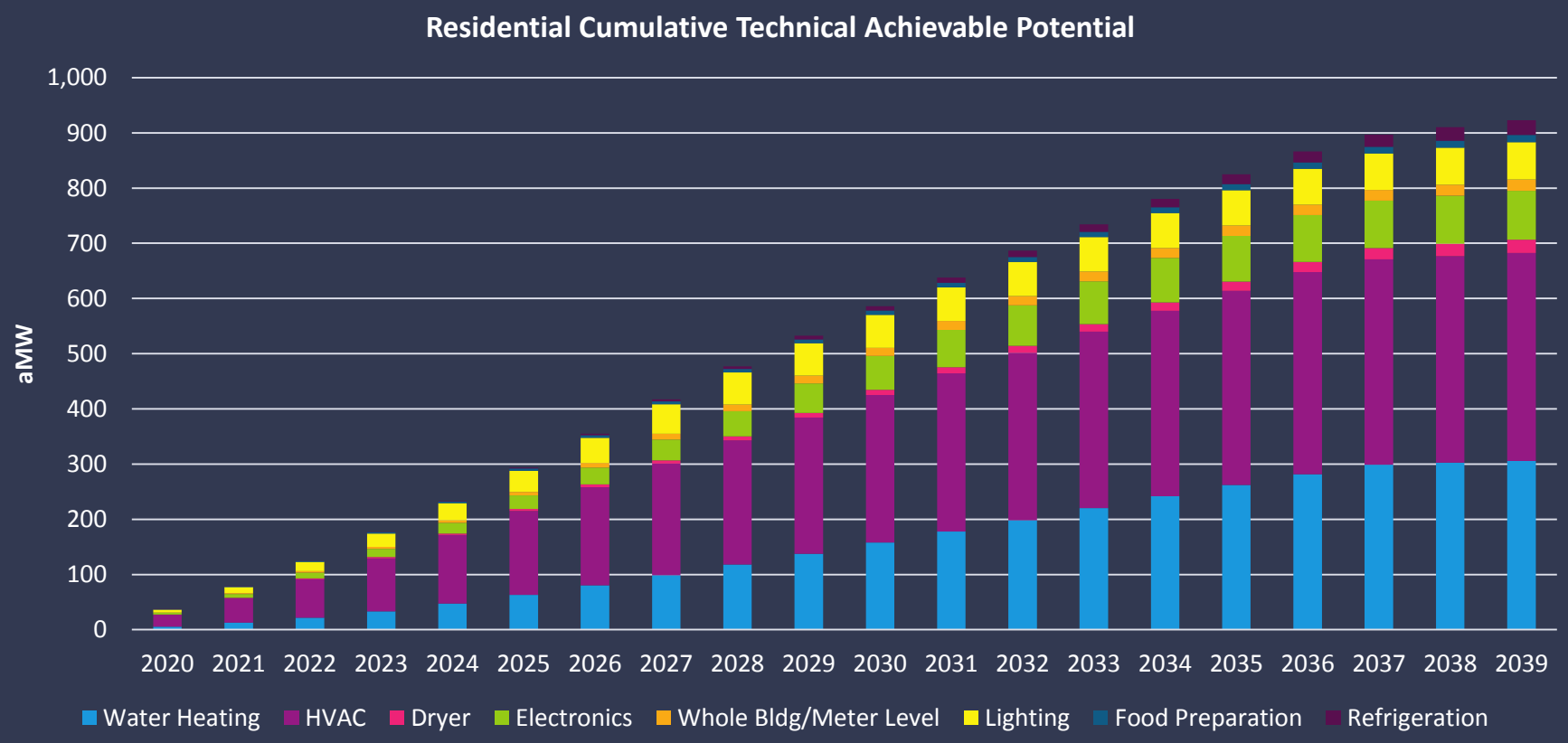


# TOTAL RESIDENTIAL ACHIEVABLE SAVINGS

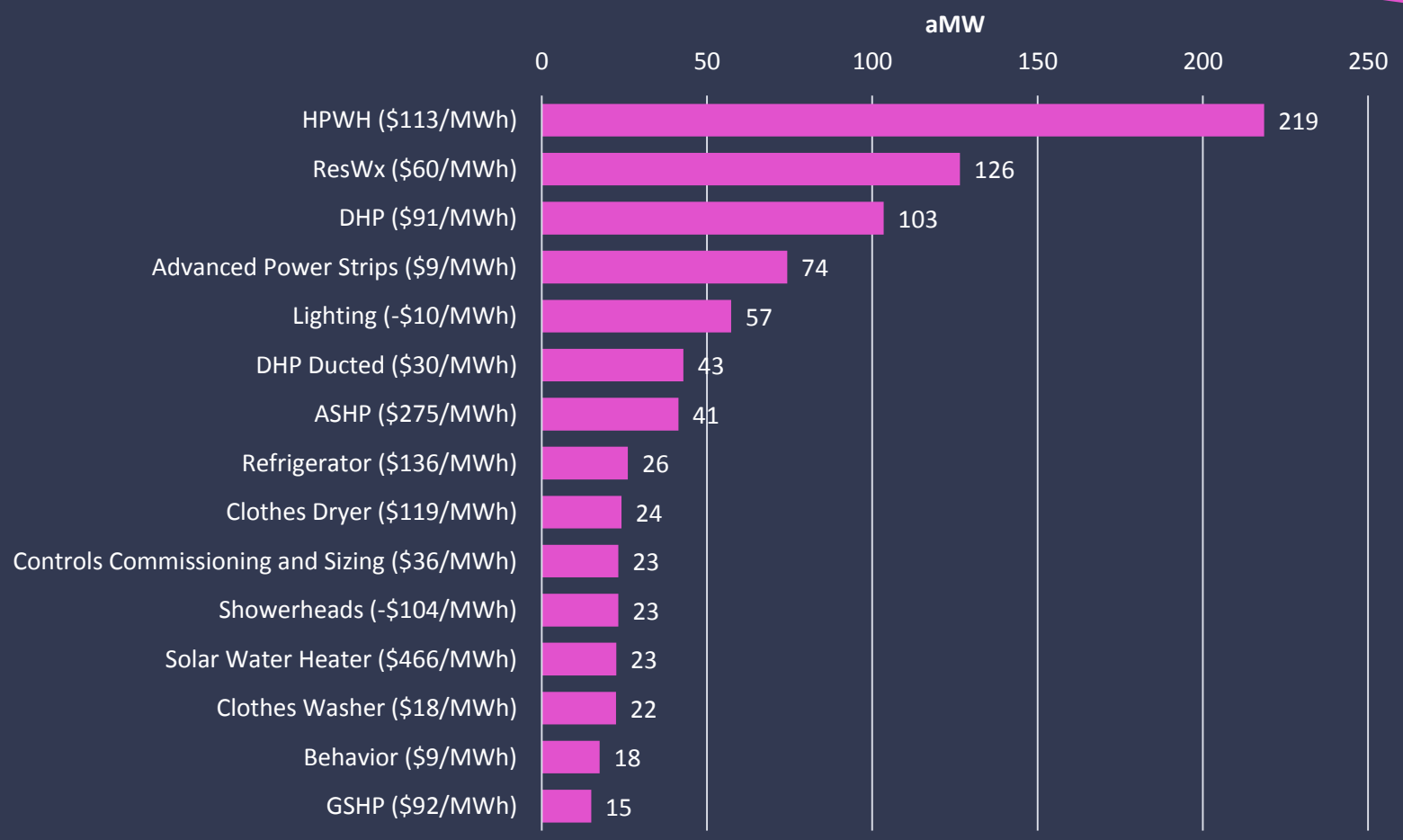
| End Use | Total 20 Year Savings |
|---|---|
| Water Heating | 306 |
| HVAC | 377 |
| Dryer | 24 |
| Electronics | 88 |
| Whole Bldg/Meter Level | 20 |
| Lighting | 68 |
| Food Preparation | 13 |
| Refrigeration | 27 |
| **Total** | **923** |



# RESIDENTIAL CUMULATIVE POTENTIAL

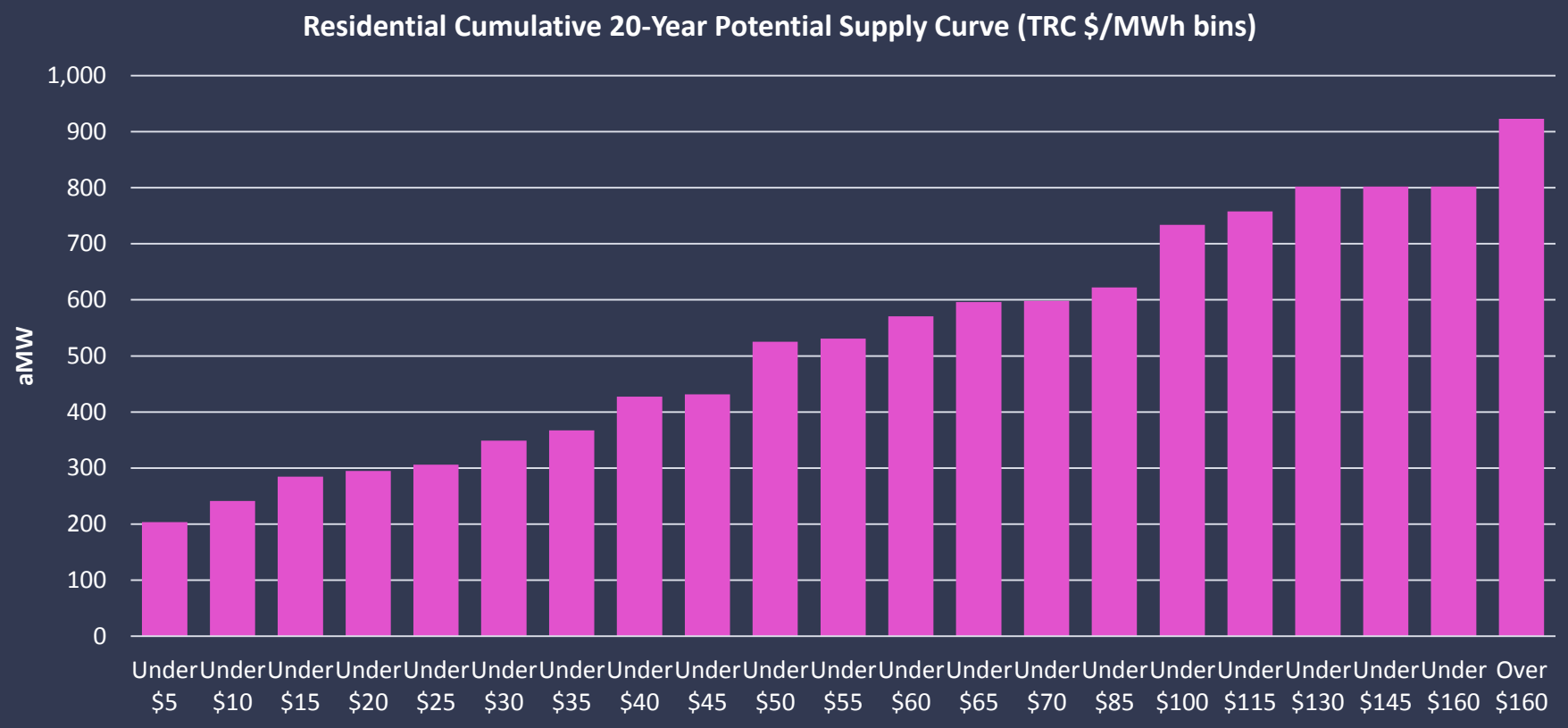


# TOP RESIDENTIAL MEASURES




Cost shown is weighted average levelized cost

# RESIDENTIAL SUPPLY CURVE



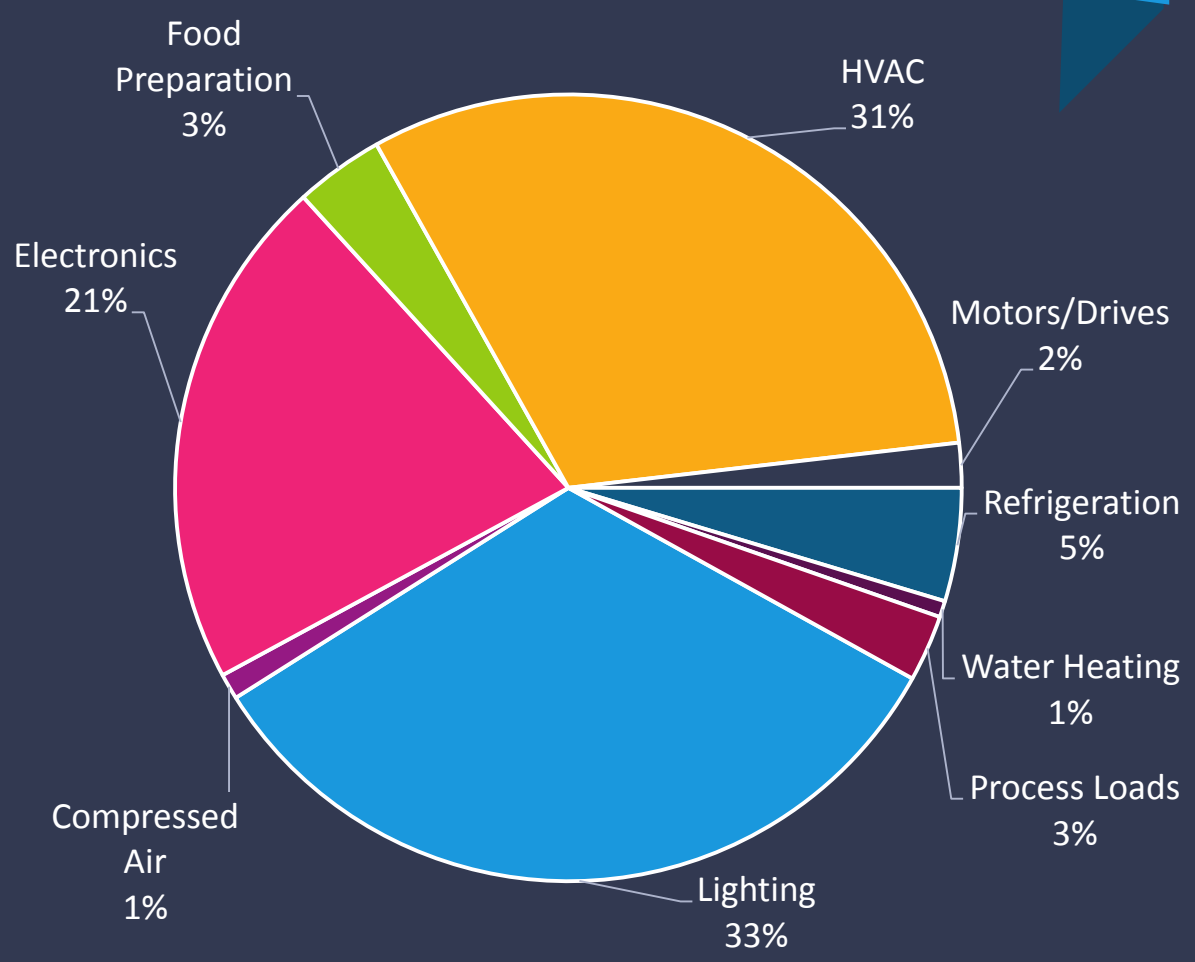
# Commercial

# Commercial Summary

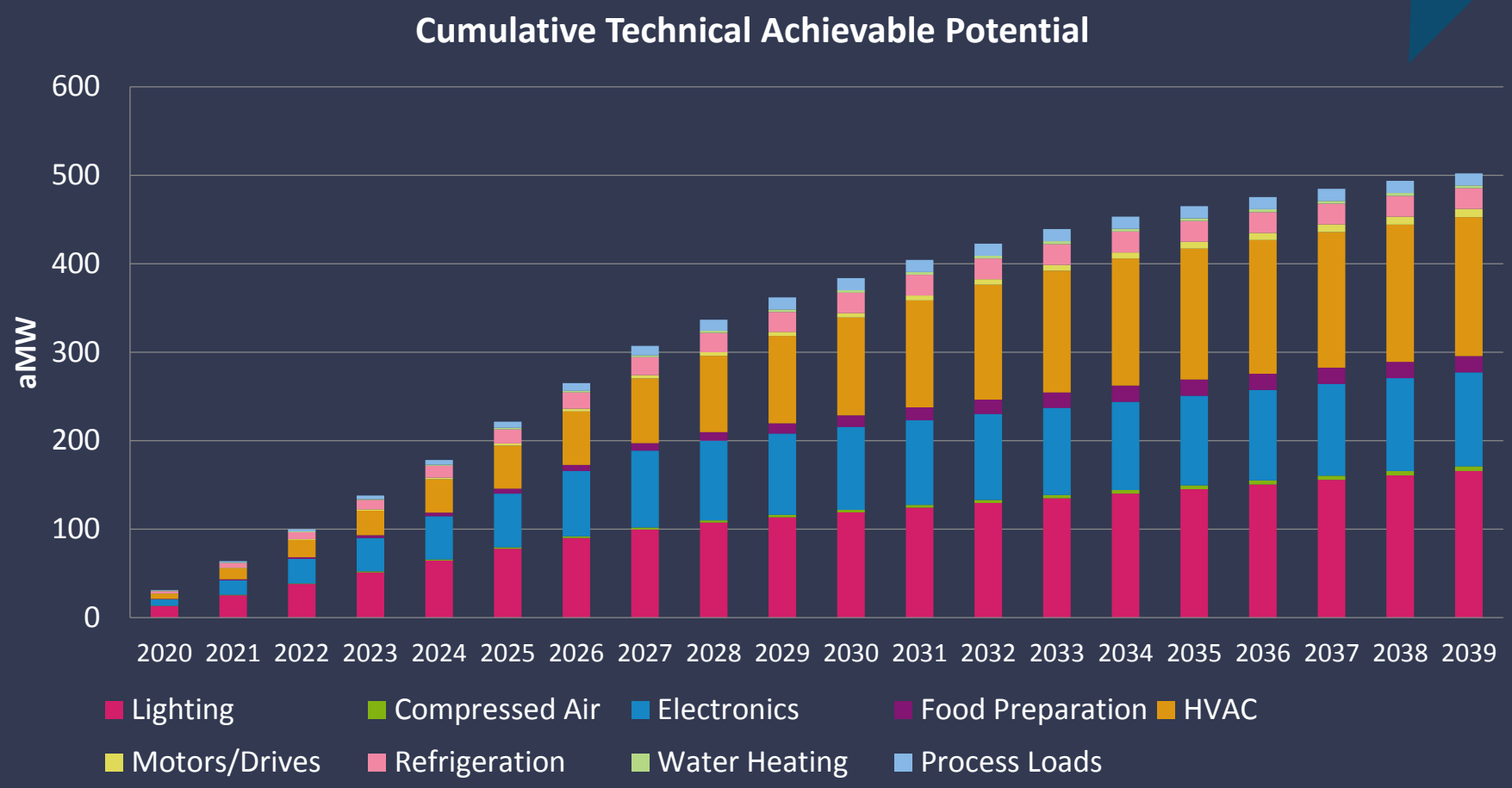
- Less commercial square footage (compared to 42% of all square footage in region)
- Commercial sales was used as proxy for floor space
- Measures updates from RTF results in both increases and decreases to per unit savings.

# TOTAL COMMERCIAL ACHIEVABLE SAVINGS

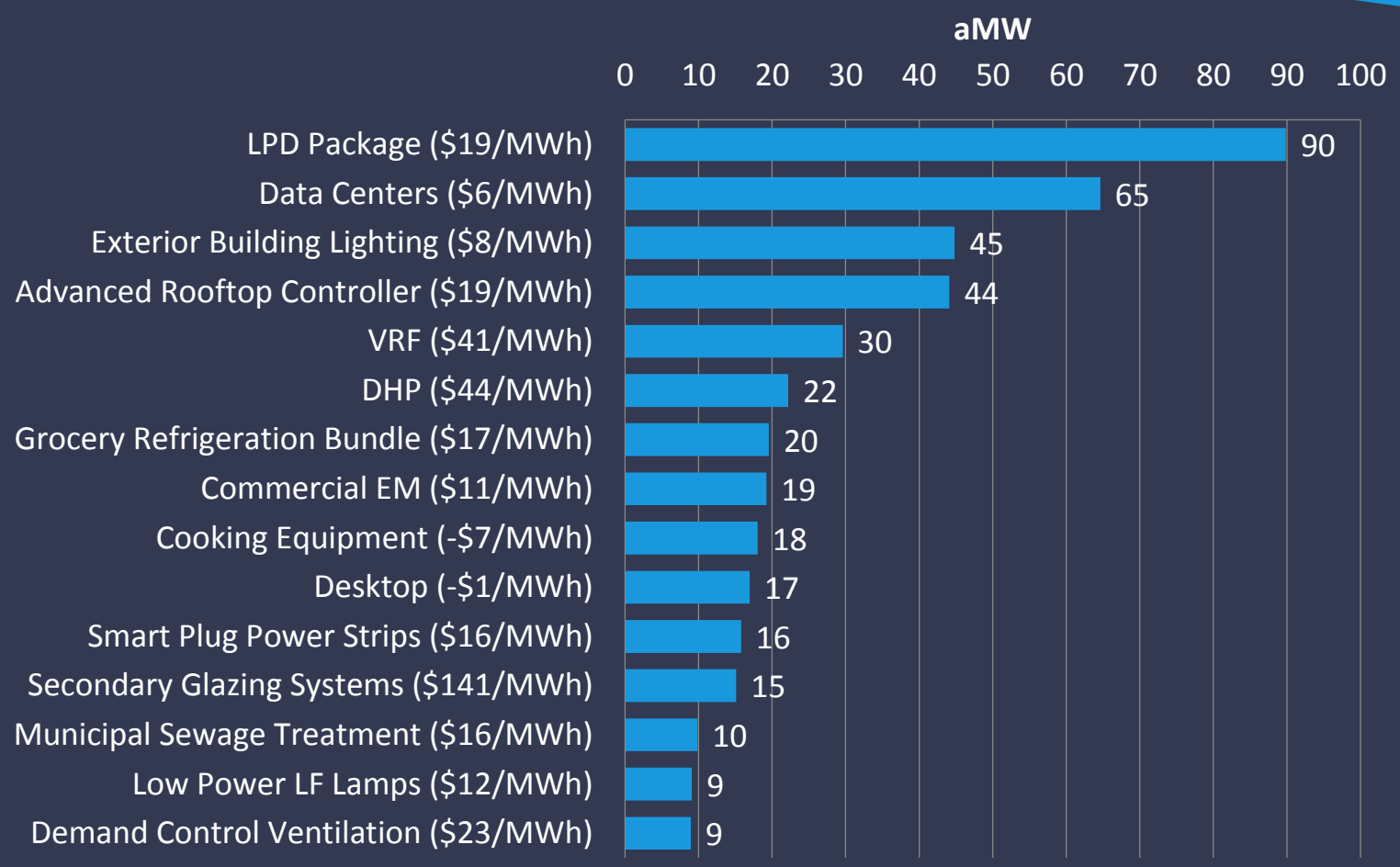
| End Use | Total 20 Year Savings |
|---|---|
| Lighting | 166 |
| Compressed Air | 5 |
| Electronics | 106 |
| Food Preparation | 18 |
| HVAC | 157 |
| Motors/Drives | 9 |
| Refrigeration | 23 |
| Water Heating | 3 |
| Process Loads | 14 |
| Total | 502 |



# 20 YEAR CUMULATIVE POTENTIAL



# TOP COMMERCIAL MEASURES

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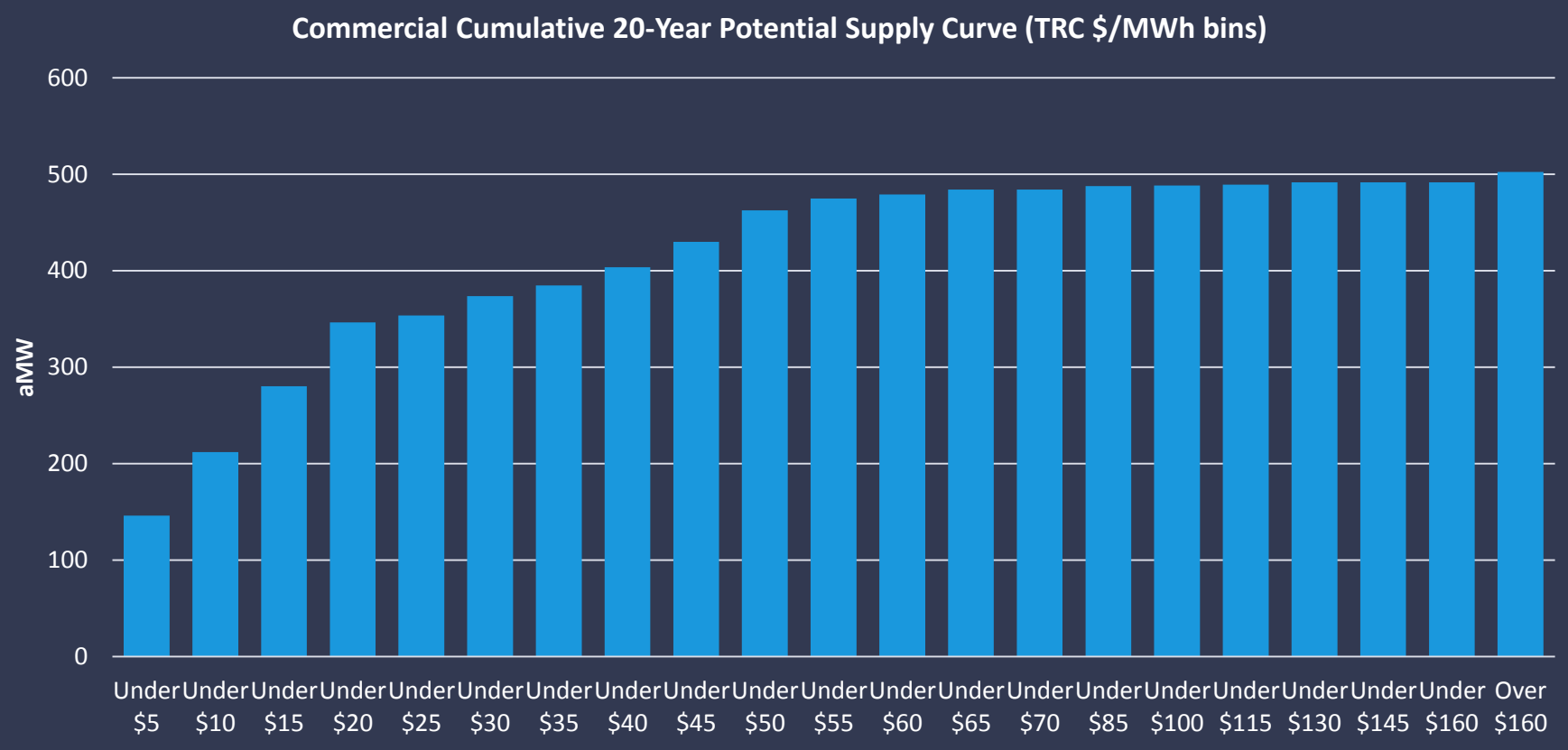
# COMMERCIAL SUPPLY CURVE



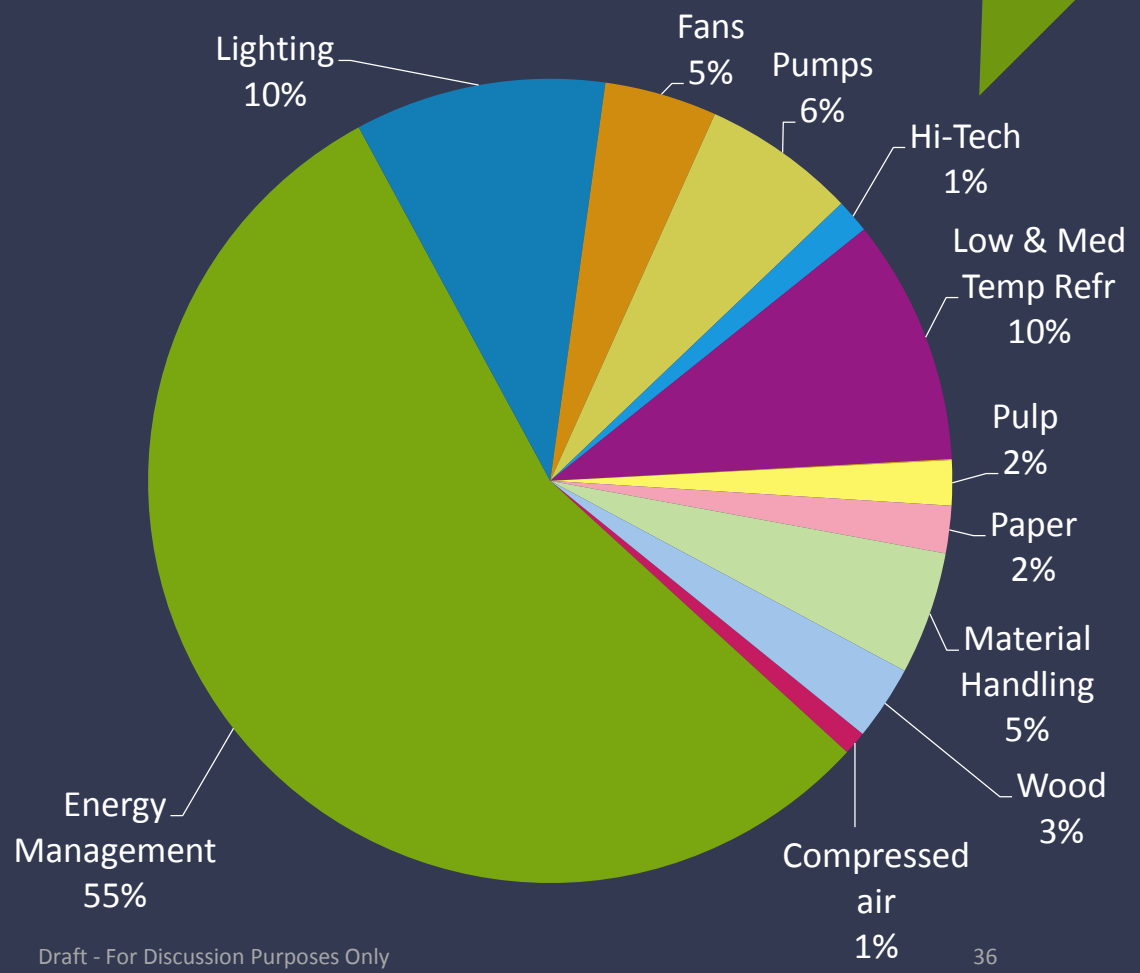
# Industrial

# Industrial Summary

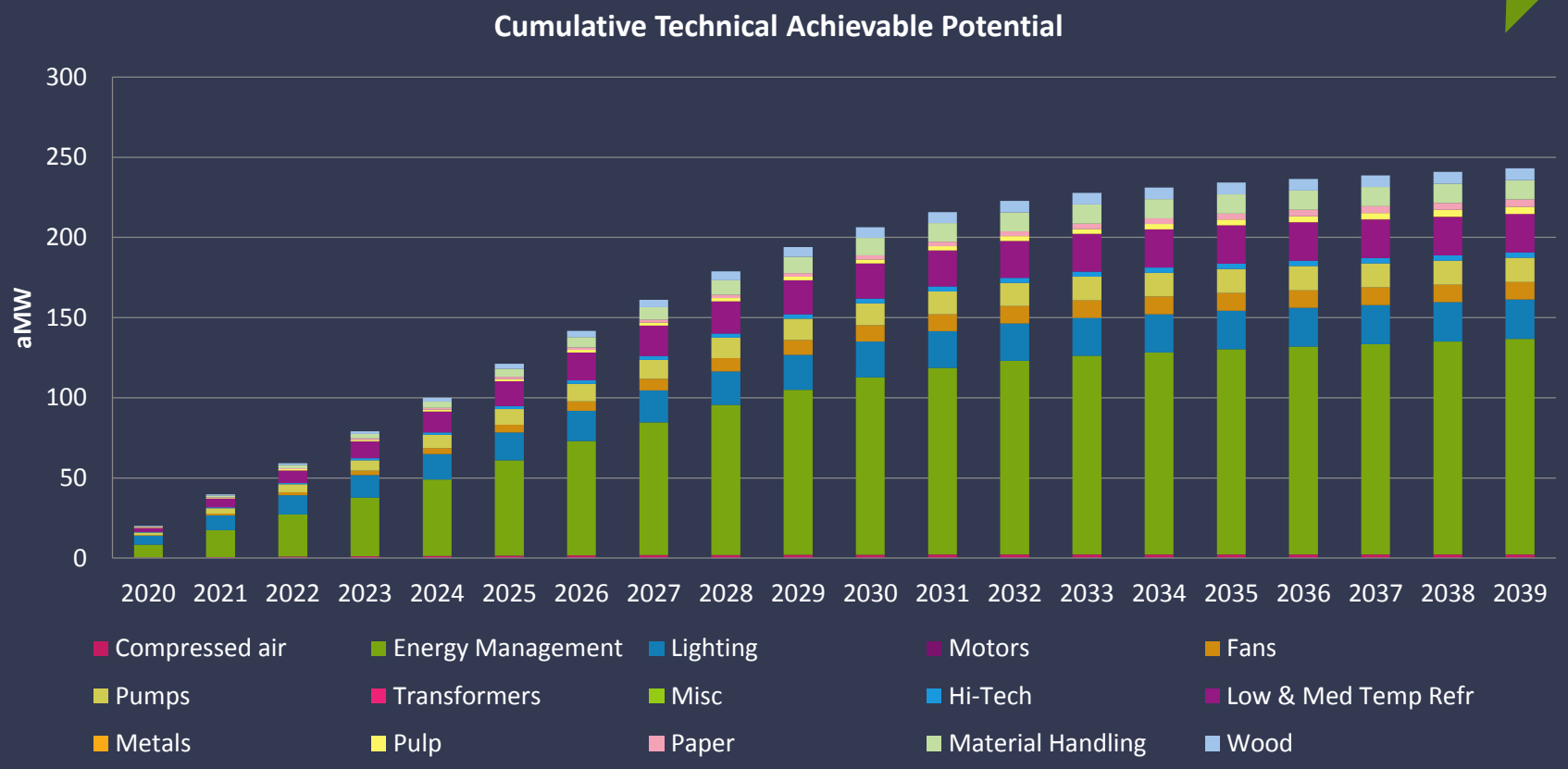
- Higher Industrial sales
- Reduction in potential due to removal of New Large Single Loads

# TOTAL INDUSTRIAL ACHIEVABLE SAVINGS

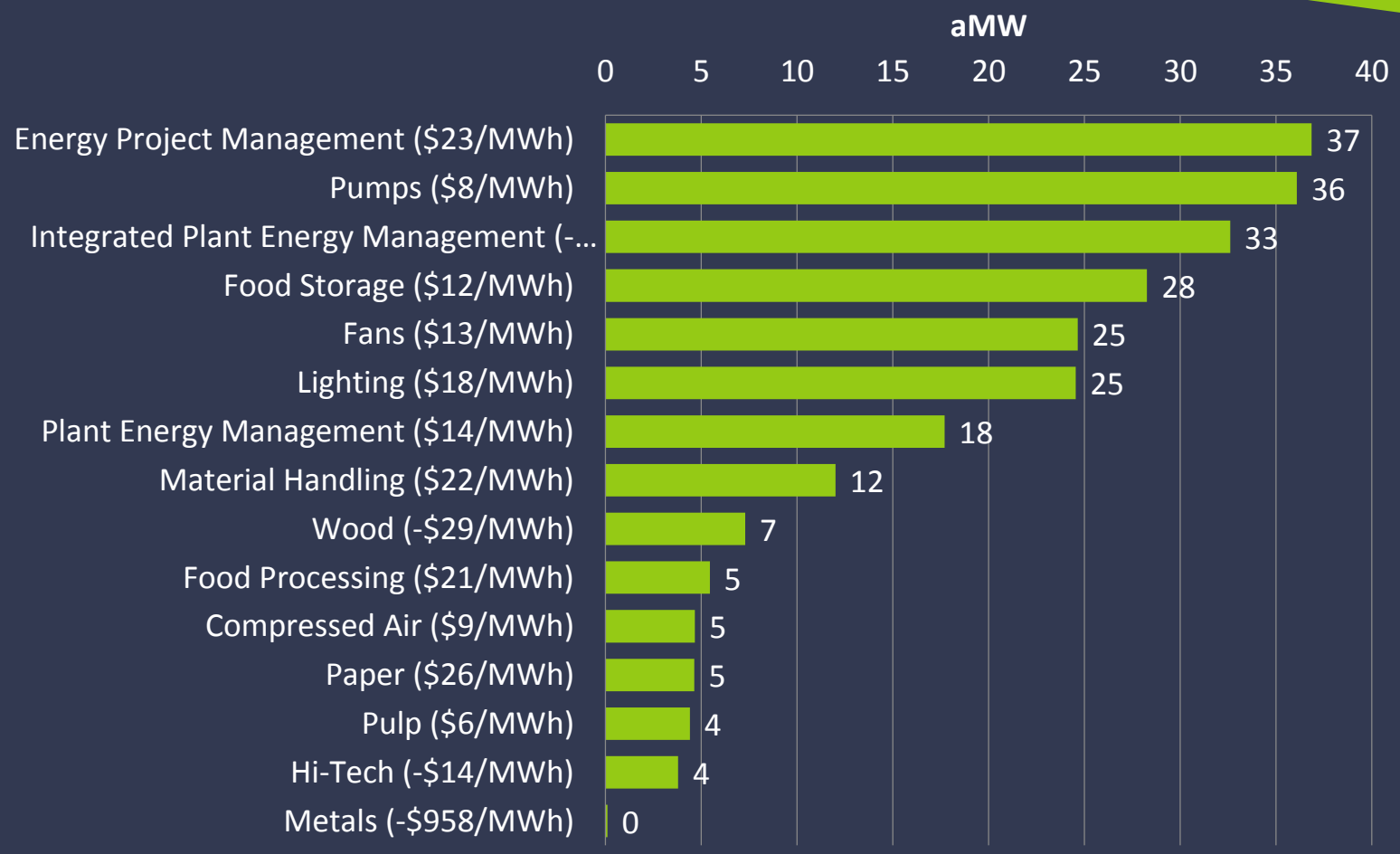
| End Use | 20 Year Total Savings |
|---|---|
| Compressed air | 2 |
| Energy Management | 134 |
| Lighting | 25 |
| Motors | 0 |
| Fans | 11 |
| Pumps | 15 |
| Transformers | 0 |
| Misc | 0 |
| Hi-Tech | 3 |
| Low & Med Temp Refr | 24 |
| Metals | 0 |
| Pulp | 4 |
| Paper | 5 |
| Material Handling | 12 |
| Wood | 7 |
| **Total** | **243** |



# 20 YEAR CUMULATIVE POTENTIAL



# TOP INDUSTRIAL MEASURES

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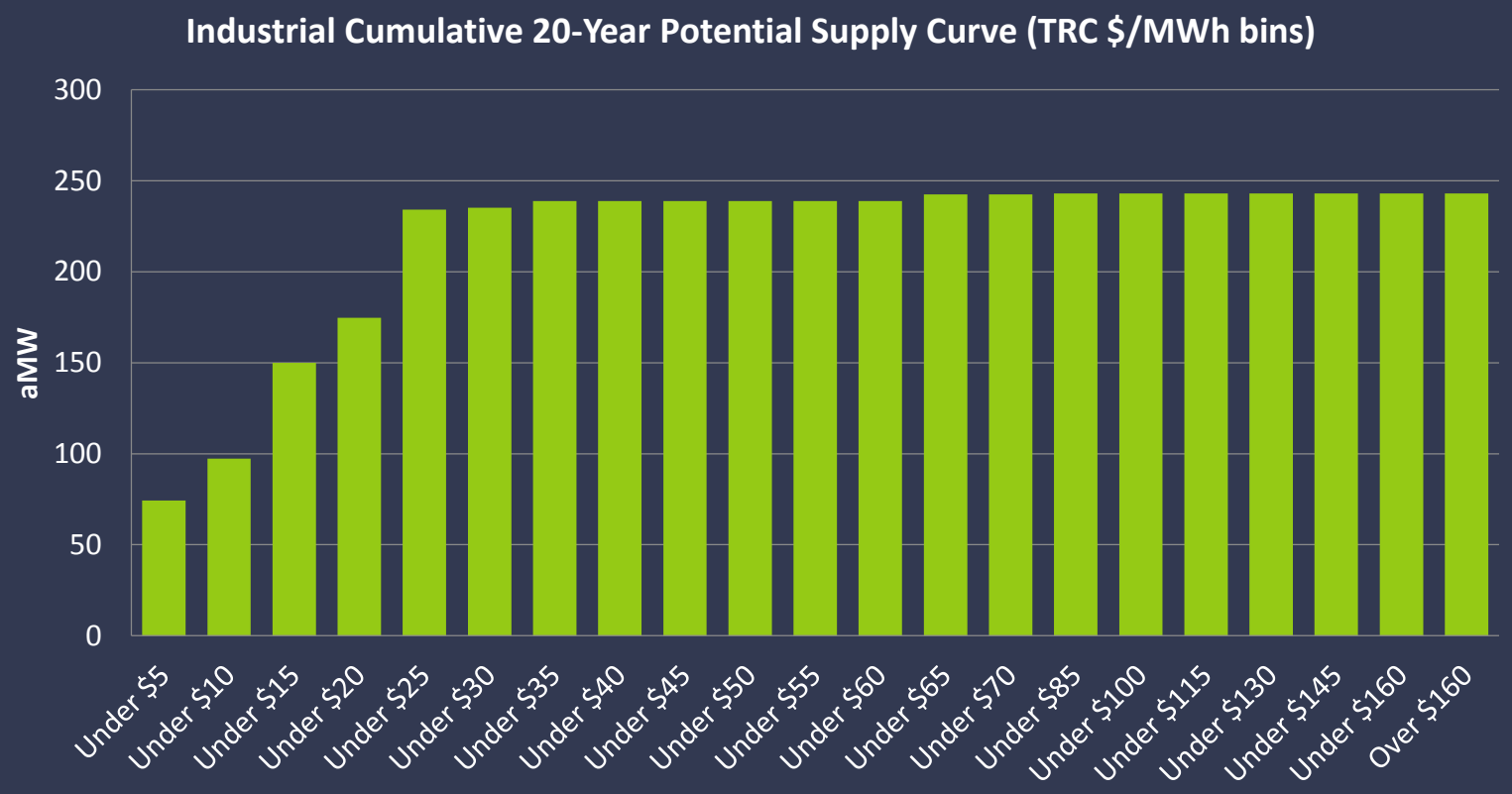
# INDUSTRIAL SUPPLY CURVE

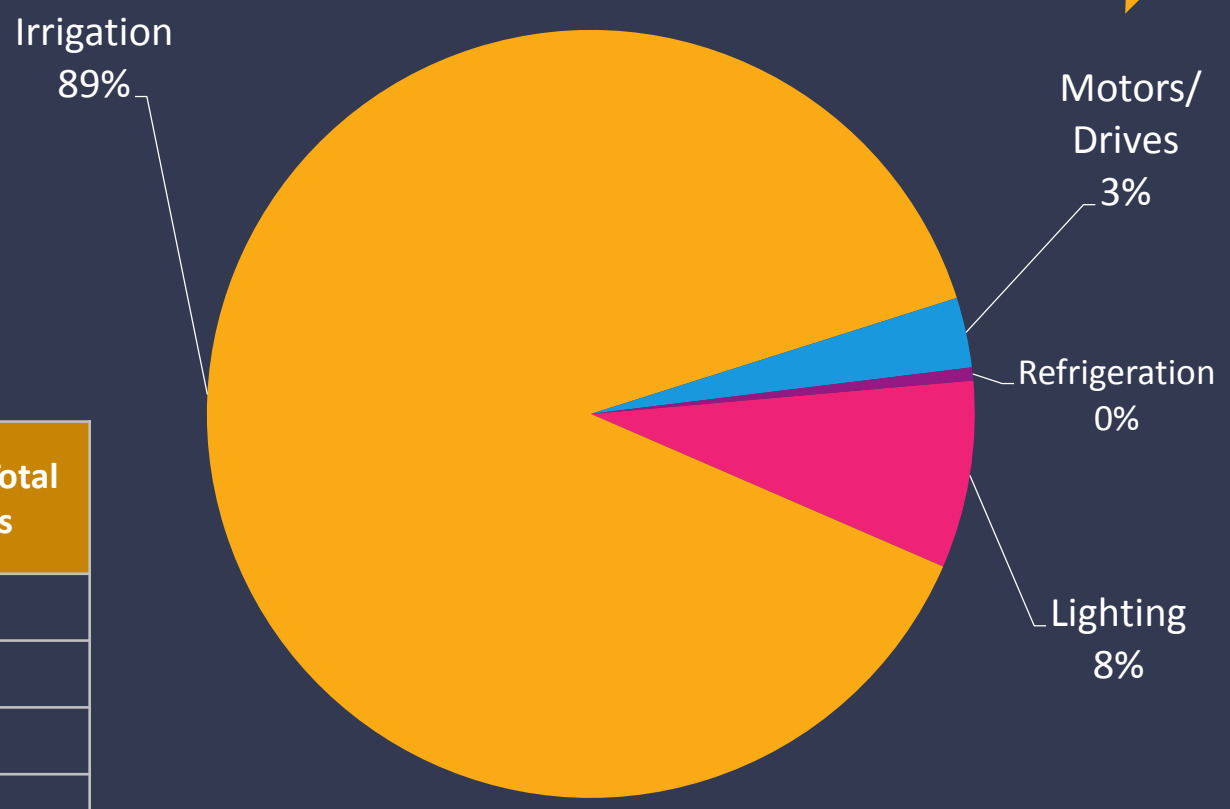


# Agriculture

# Agriculture Summary

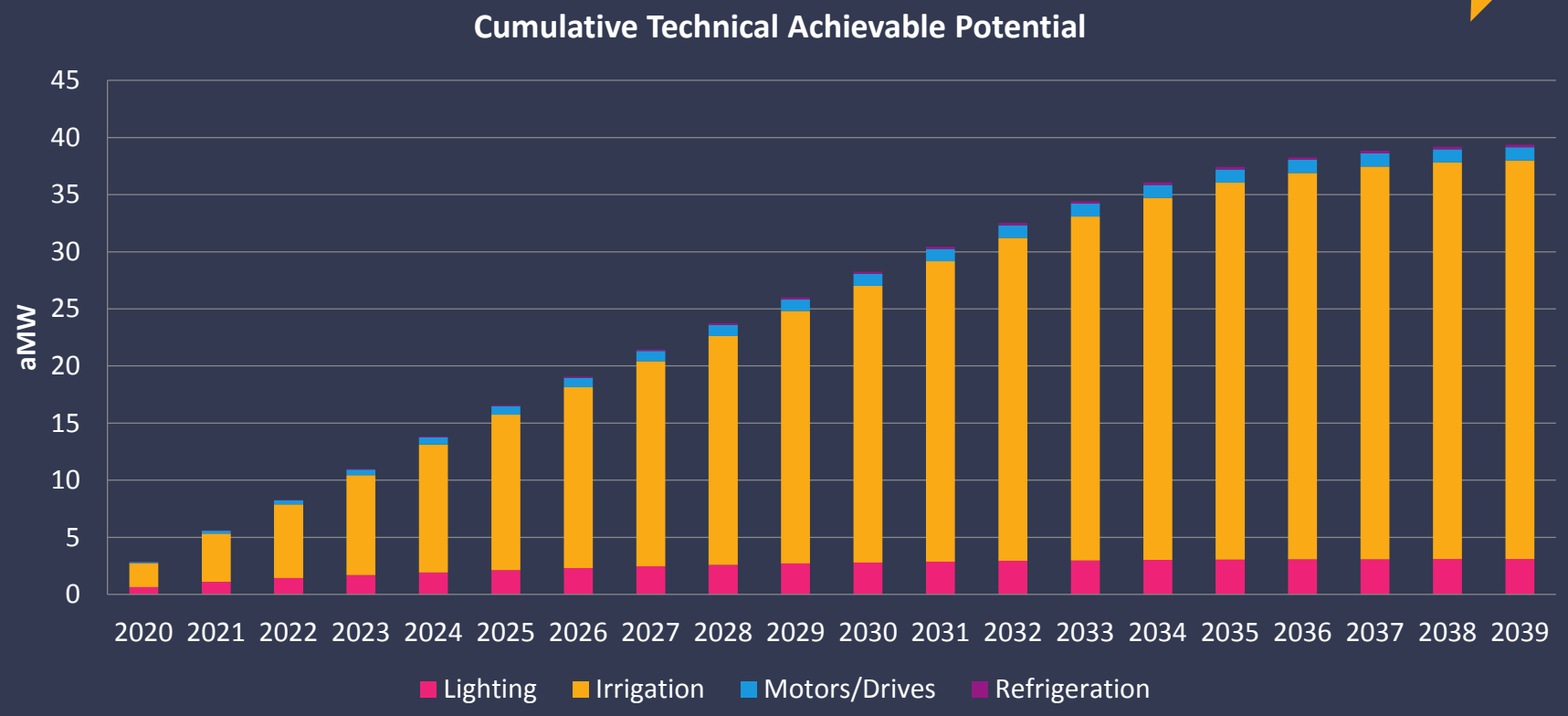
- Fewer acres of irrigated land
- Removal of SIS measure reduces savings potential.

# TOTAL AGRICULTURAL ACHIEVABLE SAVINGS

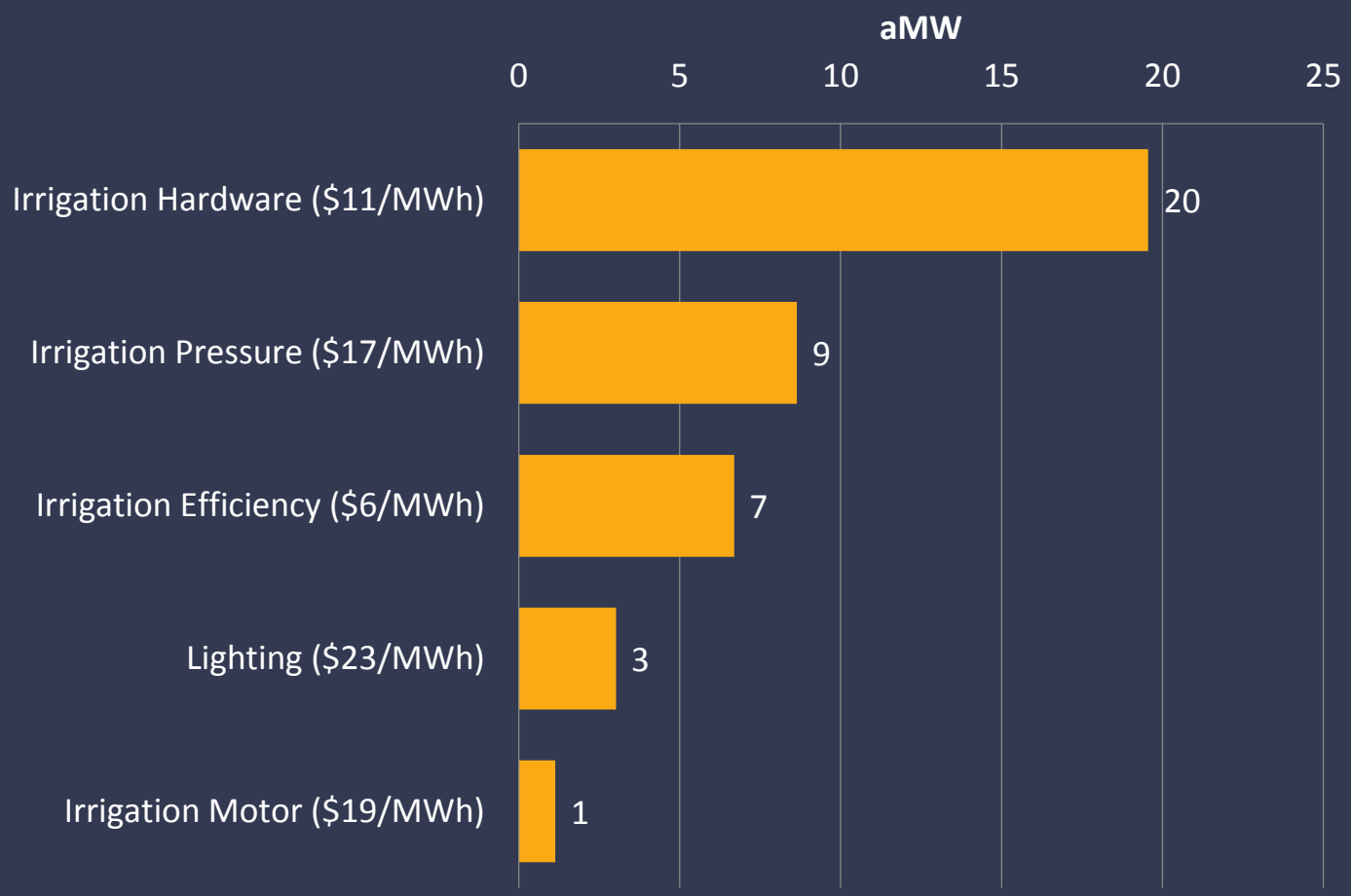



| End Use | 20 Year Total Savings |
|---|---|
| Lighting | 3 |
| Irrigation | 35 |
| Motors/Drives | 1 |
| Refrigeration | 0 |
| Total | 39 |

# 20 YEAR CUMULATIVE POTENTIAL



# TOP AGRICULTURAL MEASURES

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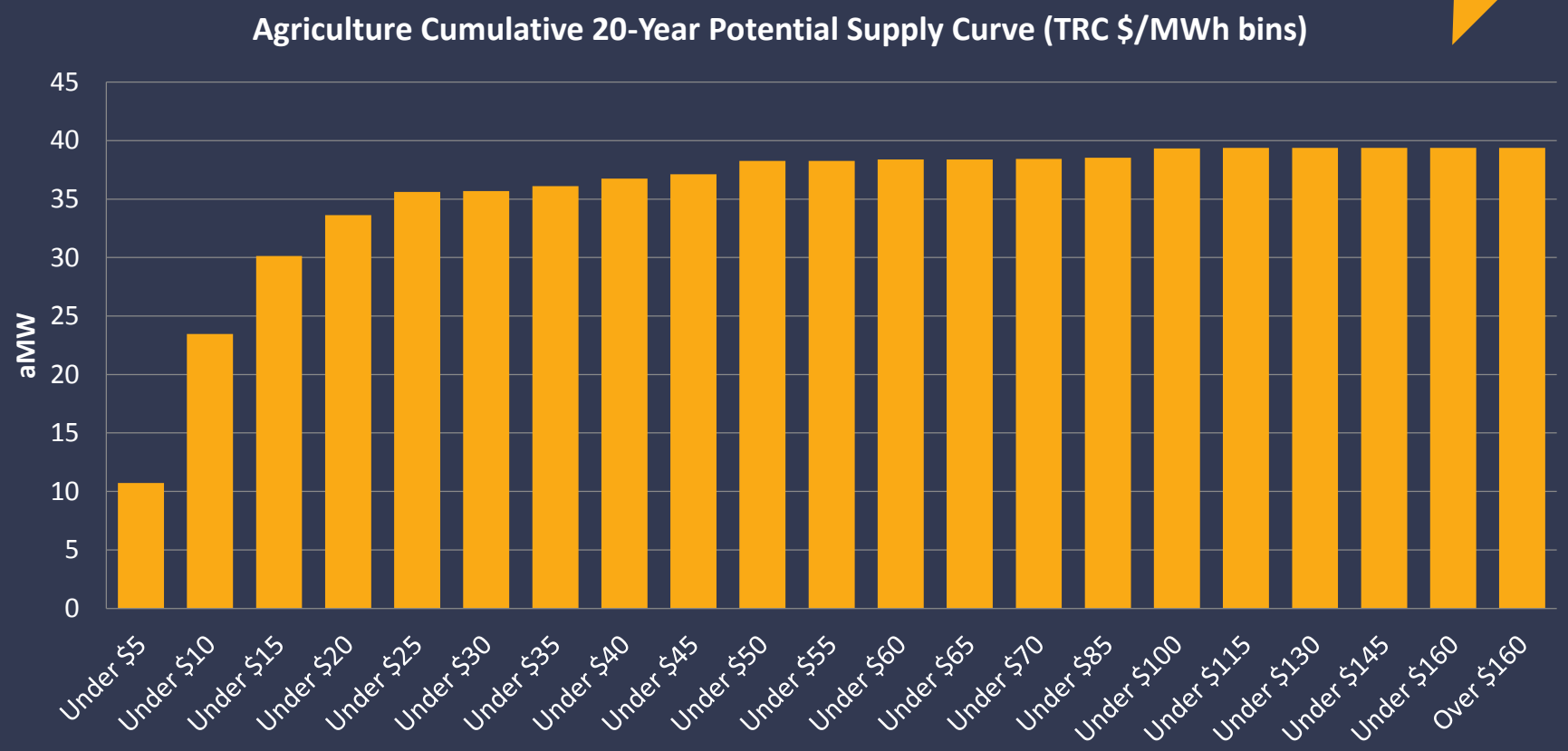
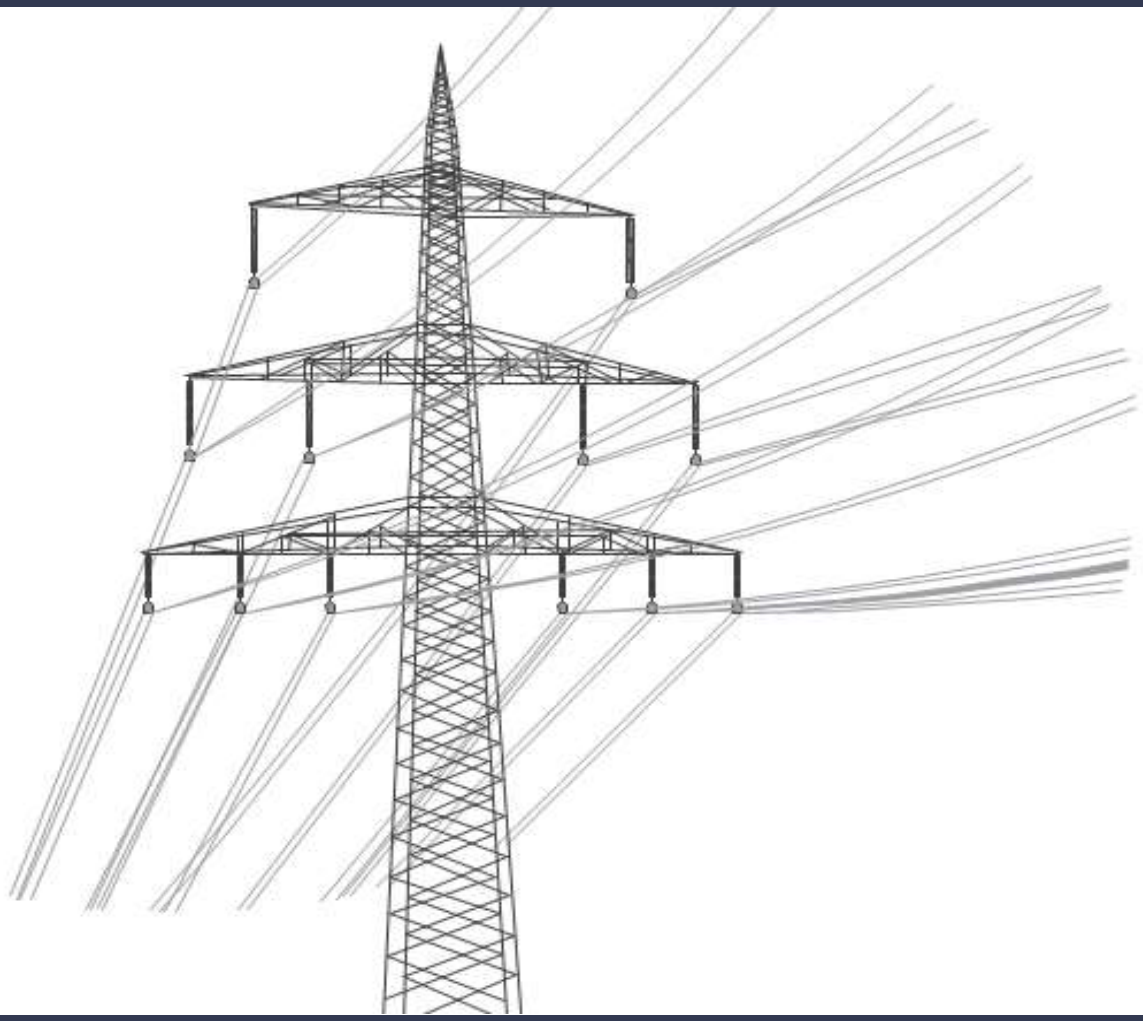
# AGRICULTURAL SUPPLY CURVE



# Utility System



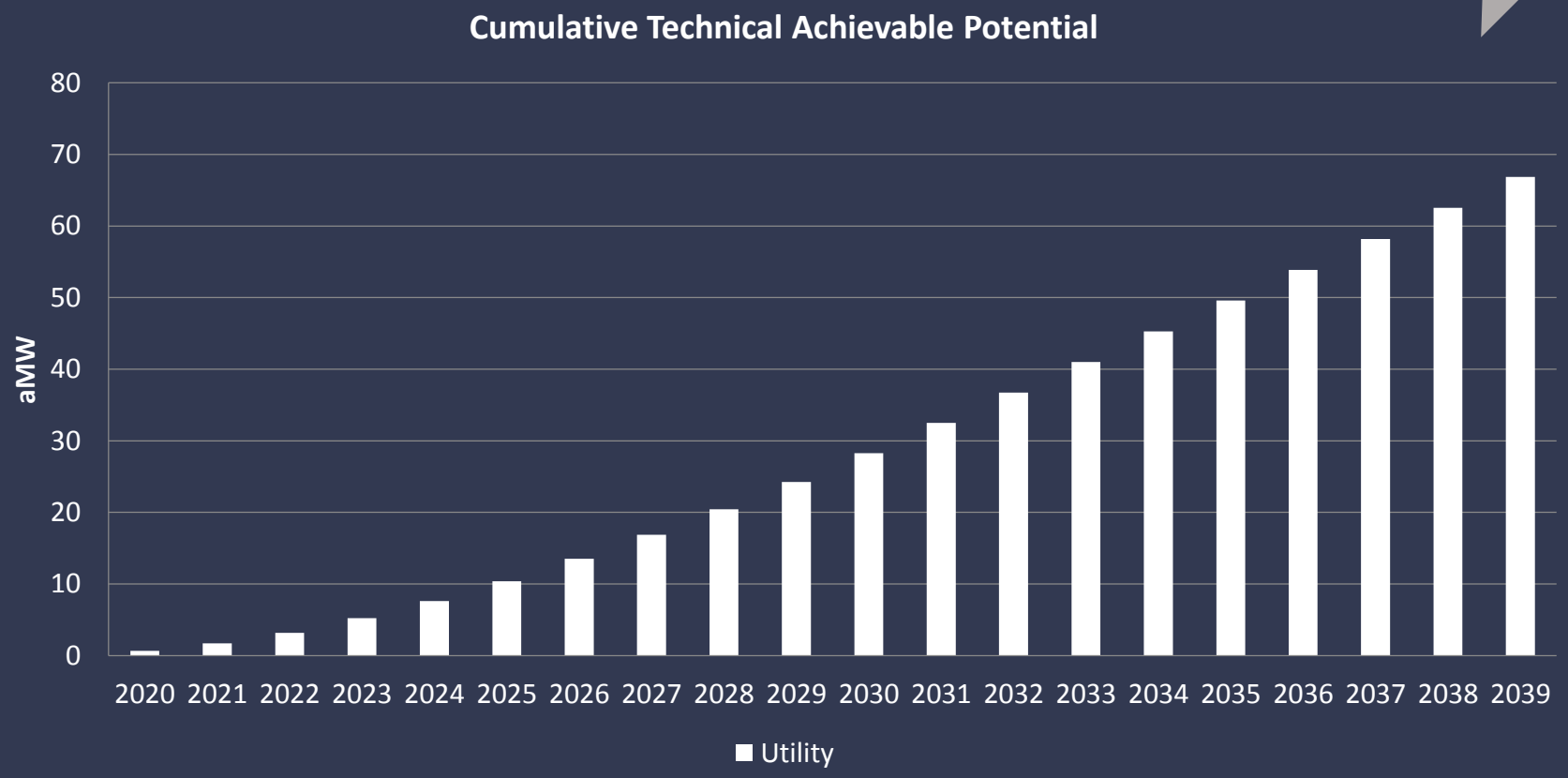
# Utility System Summary

- Fewer applicable substations resulted in lower potential

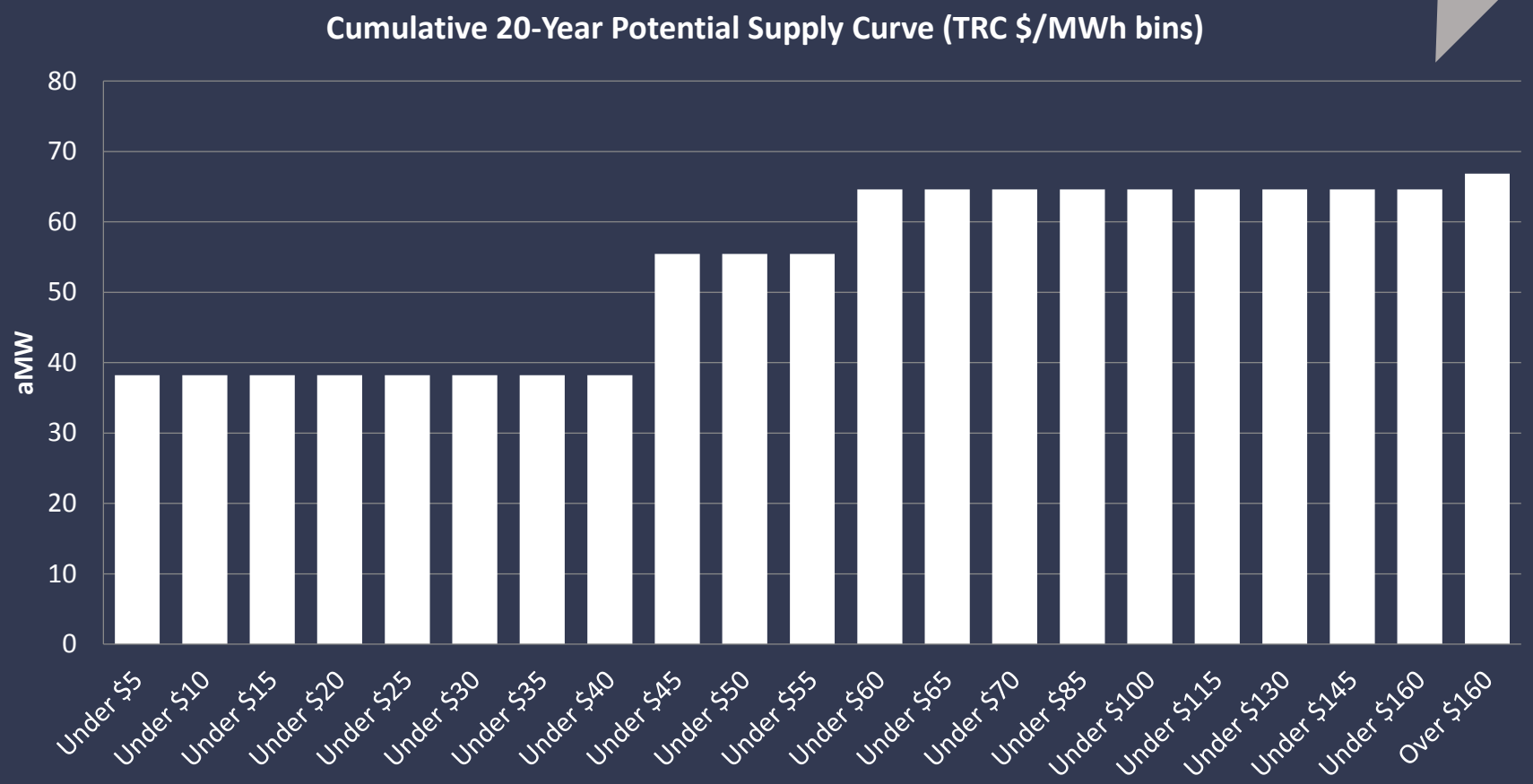
# TOTAL UTILITY SYSTEM ACHIEVABLE SAVINGS

| Utility System | 20 Year Total Savings (aMW) |
|---|---|
| Total | 67 |

# 20 YEAR CUMULATIVE SAVINGS



# SUPPLY CURVE



# Next Steps

| | |
|---|---|
| March | Supply Curves to Resource Program |
| April | Finalize Workbook and Report |
| May | Resource Program Workshop |
| June/July | EE Goals Public Process |

# For More Information

- **Contact your EER**

- **Danielle Walker**

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POWER ADMINISTRATION

# THANK YOU!

(And a very special thank you to the Council EE Staff )