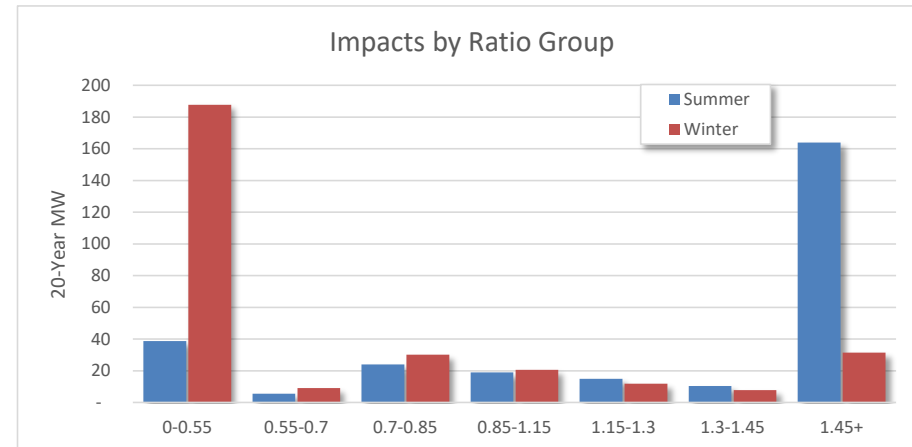
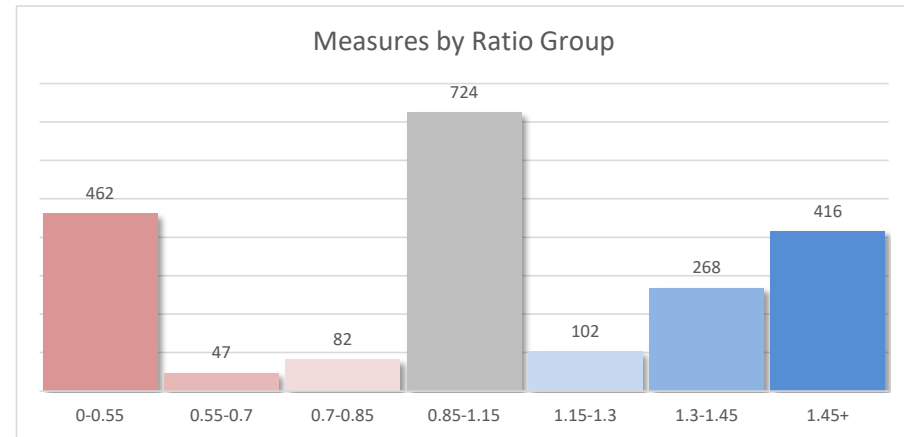


# GROUPING MEASURES BY RESOURCE SHAPE

For each measure **not included in the economic potential**, AEG calculated the ratio of summer to winter impacts.

- Ratios near 1.0 indicate measures with minimal seasonal variation (e.g., refrigeration)
- Higher ratios = larger summer impacts (blue bars)
- Lower ratios = larger winter impacts (red bars)

Resources are grouped based on contributions on summer and winter weekdays.



# EXAMPLE MEASURES BY GROUP

	Residential	C&I	Irrigation
Summer	<ul style="list-style-type: none"> <li>• Central AC</li> <li>• Insulation – Ducting</li> <li>• Windows - Cellular Shades</li> <li>• Windows - Install Reflective Film</li> <li>• Appliance Recycling</li> </ul>	<ul style="list-style-type: none"> <li>• RTU - Evaporative Precooler</li> <li>• HVAC – Economizer</li> <li>• RTU - Advanced Controls</li> <li>• Exterior Lighting - Enhanced Controls</li> <li>• Thermostat - Wi-Fi/Interactive</li> <li>• HVAC - Economizer</li> </ul>	<ul style="list-style-type: none"> <li>• Center Pivot/Linear - MESA Sprinkler Replacement</li> <li>• Variable Rate Irrigation</li> <li>• Center Pivot/Linear - LESA Sprinkler Replacement</li> </ul>
Winter	<ul style="list-style-type: none"> <li>• Air Source Heat Pumps</li> <li>• ENERGY STAR Home Design</li> <li>• Ductless Mini Split Heat Pump</li> <li>• Windows - Low-e Storm Addition</li> <li>• Thermostat – Connected</li> <li>• Integrated Heat Pump - Combination HVAC and DHW</li> </ul>	<ul style="list-style-type: none"> <li>• Advanced New Construction Designs</li> <li>• Space Heating - Heat Recovery Ventilator</li> <li>• Ductless Mini Split Heat Pump</li> </ul>	
Other	<ul style="list-style-type: none"> <li>• Connected Home Control System</li> <li>• Advanced New Construction Design - Zero Net Energy</li> <li>• Insulation - Wall Sheathing</li> </ul>	<ul style="list-style-type: none"> <li>• Cooking - Exhaust Hoods with Sensor Control</li> <li>• Municipal Water Treatment - Pulsed Air Mixing</li> <li>• Refrigeration - Evaporative Condenser</li> <li>• Refrigeration - Low-Heat/No-Heat Doors</li> </ul>	

# INITIAL MEASURE BUNDLING

Process:


1. Group measures by sectors and season
2. Identify natural break points in the supply curve
3. Calculate weighted average cost of measures in bundles
4. Check that bundles produce at least 1 megawatt (MW) per resource per year
  - Most bundles are too small (<1 MW/year)

Sector-Season	Price Range	Average Annual MW	Weighted Levelized Cost (\$/MWh)
Residential Summer	Low	0.19	\$82
	Low-Mid	0.35	\$124
	Mid	0.28	\$335
	High	0.51	\$684
Residential Winter	Very Low	0.55	\$14
	Low	1.70	\$46
	Low-Mid	1.26	\$60
	Mid	1.94	\$78
	Mid-High	1.04	\$100
	High	1.80	\$360
Residential Other	All	0.04	\$358
C&I Summer	Low	0.23	\$72
	Low-Mid	0.55	\$123
	Mid	0.49	\$235
	High	0.36	\$1,303
C&I Winter	Low	0.59	\$81
	Mid	0.42	\$144
	High	0.28	\$888
C&I Other	All	0.29	\$297

# REVISED MEASURE BUNDLING

## Collapse Sectors and Price Ranges

Peak Season	Price Range	Average Annual MW	Weighted Levelized Cost (\$/MWh)
Residential Summer	Low	0.19	\$82
	Low-Mid	0.35	\$124
	Mid	0.28	\$335
	High	0.51	\$684
Residential Winter	Very Low	0.55	\$14
	Low	1.70	\$46
	Low-Mid	1.26	\$60
	Mid	1.94	\$78
	Mid-High	1.04	\$100
Residential Other	High	1.80	\$360
	Low	0.04	\$358
C&I Summer	Low	0.23	\$72
	Low-Mid	0.55	\$123
	Mid	0.49	\$235
	High	0.36	\$1,303
C&I Winter	Low	0.59	\$81
	Mid	0.42	\$144
	High	0.28	\$888
C&I Other	Low	0.29	\$297



Peak Season	Price Range	Average Annual MW	Weighted Levelized Cost (\$/MWh)
Summer	Low	2.30	\$103
	High	6.73	\$588
Winter	Low	7.93	\$66
	High	4.19	\$308

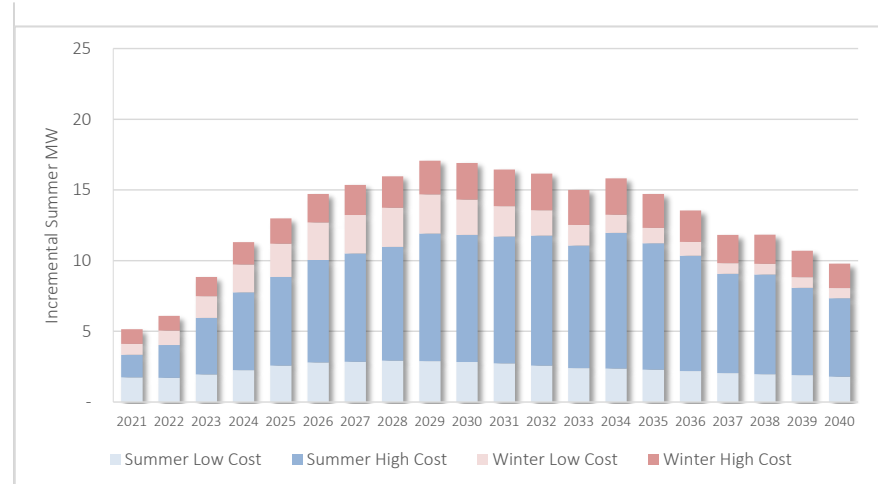
# REVISED MEASURE BUNDLING

## Incremental Annual Impacts

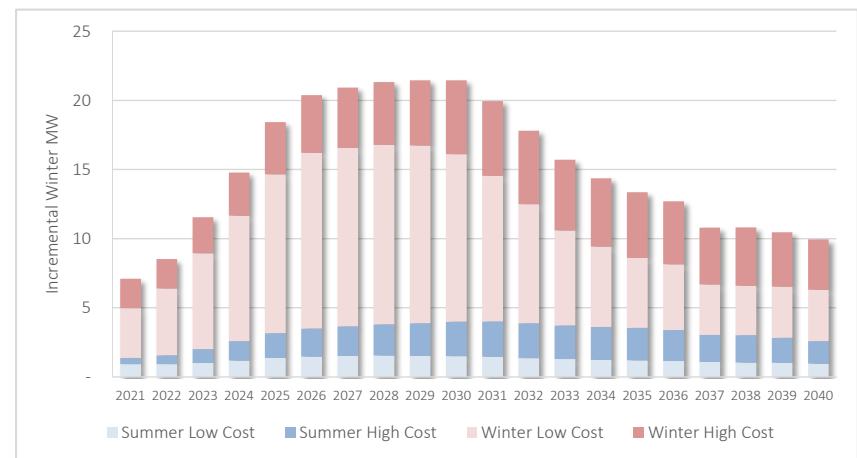
### Key Findings:

- All bundles provide impacts in both seasons, but impacts for each bundle are higher in the season identified by the measure ratios.
- Potential for demand reduction is significantly higher in the winter, driven by the winter-focused bundles.
  - Reminder: Economic Achievable Potential is not included in these graphs and will tend to have higher summer impacts due to higher avoided costs in that season.

### Summer



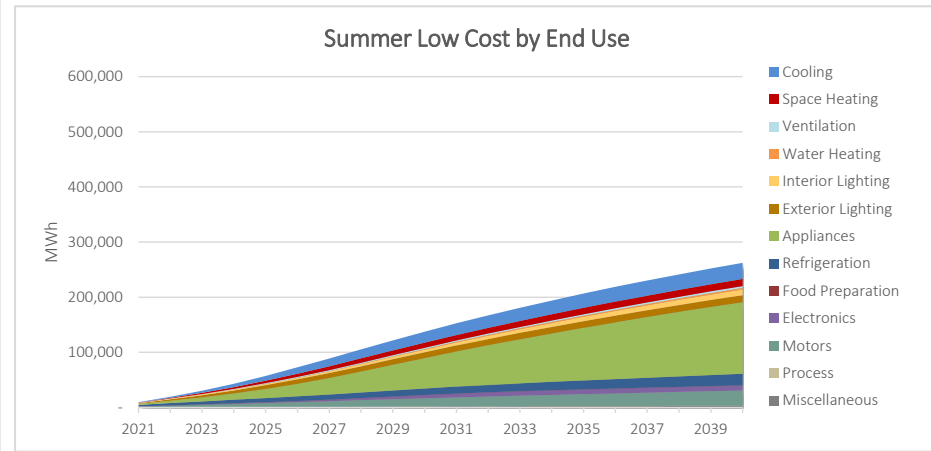
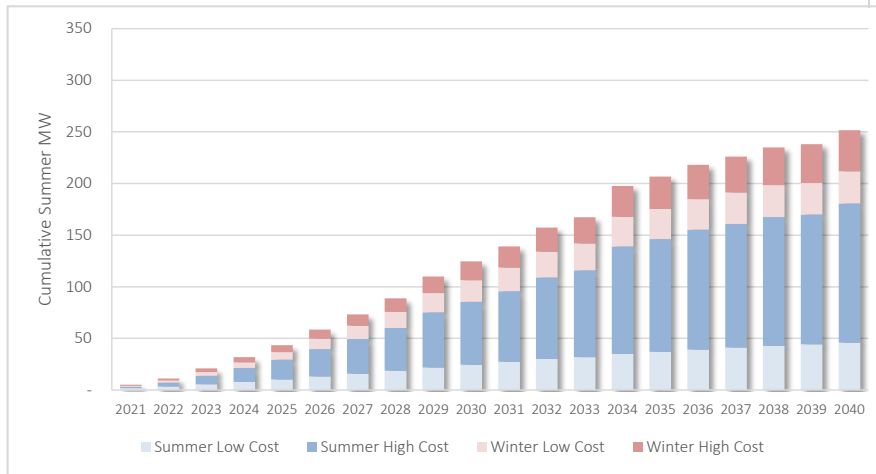
### Winter



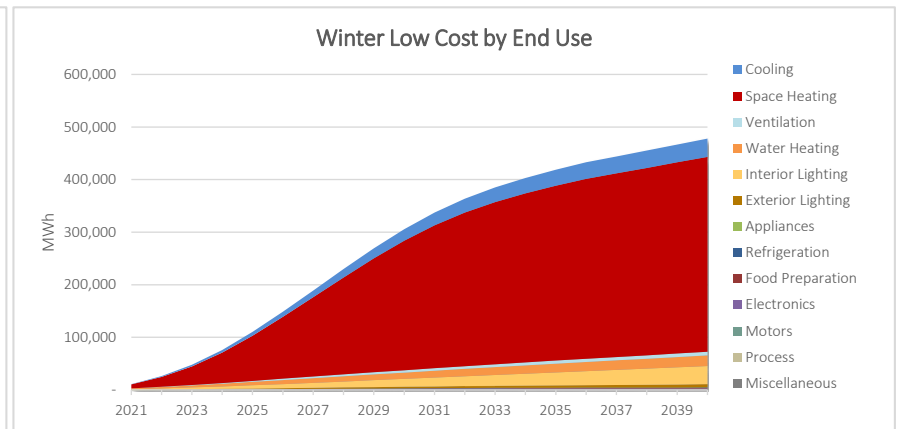
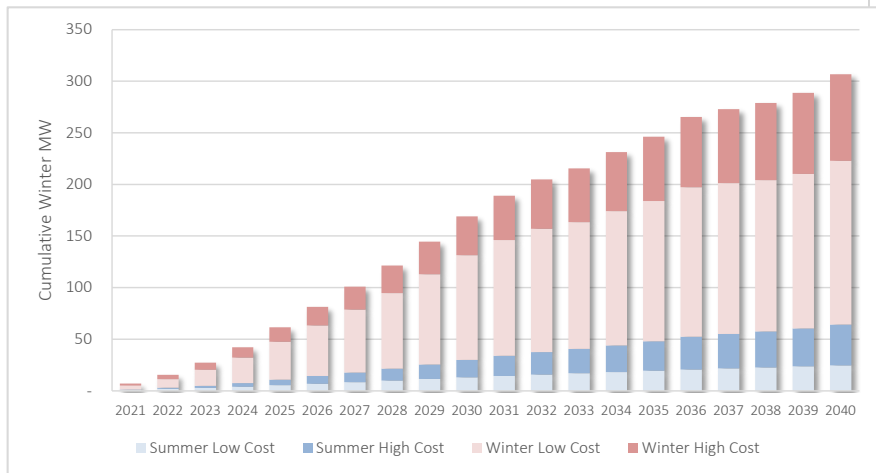
# ADDITIONAL DETAIL

## Cumulative Impacts

### Summer



### Winter





Eli Morris

Fuong Nguyen