Net Metering Session I

Rick Gilliam

Introductory Section

VOTE SOLAR

Introduction

VOTE SOLAR

- Vote Solar: national advocacy organization dedicated to fighting climate change by bringing solar into the mainstream.

- Rick Gilliam: Background includes cost allocation and rate design work at FERC, 12 years as head of Revenue Requirements for PS Colorado, 5 years in Government Affairs at Sun Edison.

Customer Class Load Shapes and the PV Generation Profile

(Average of 12 Peak Days)

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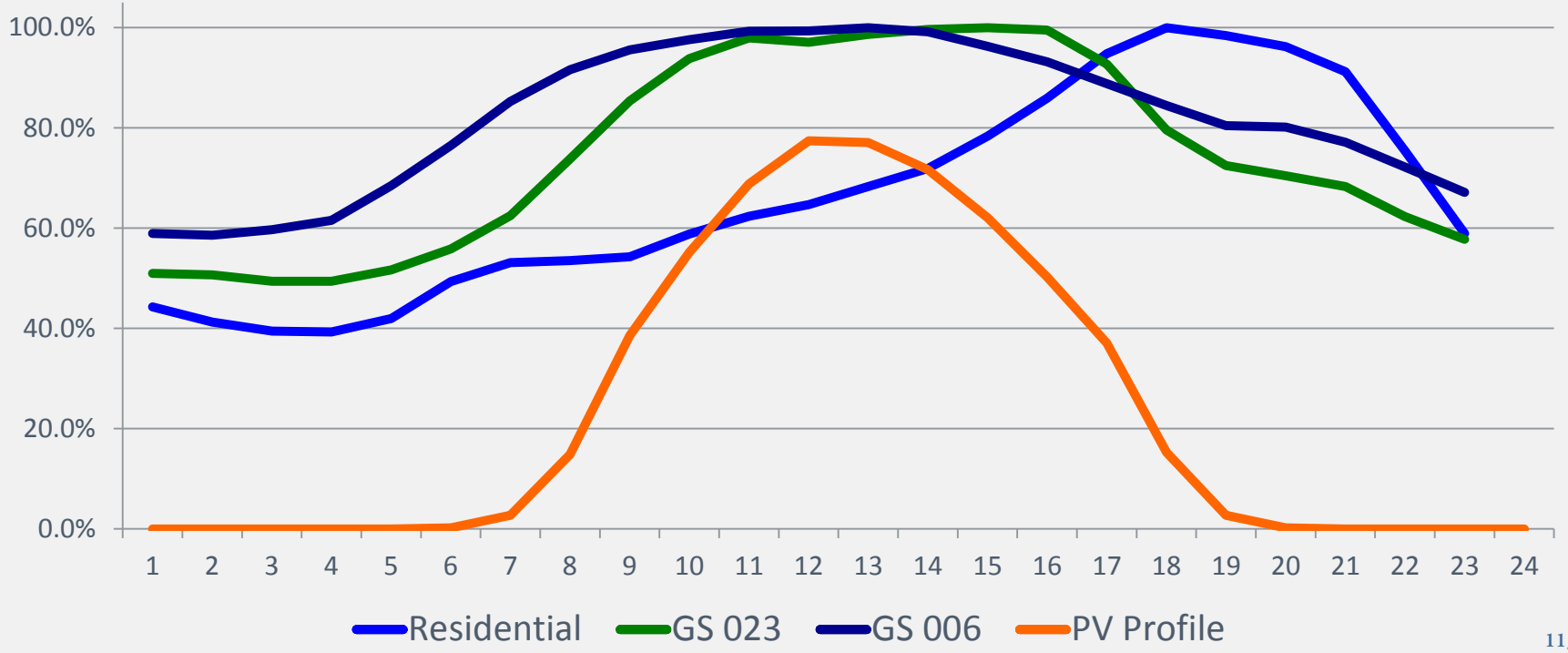

Unpacking Residential

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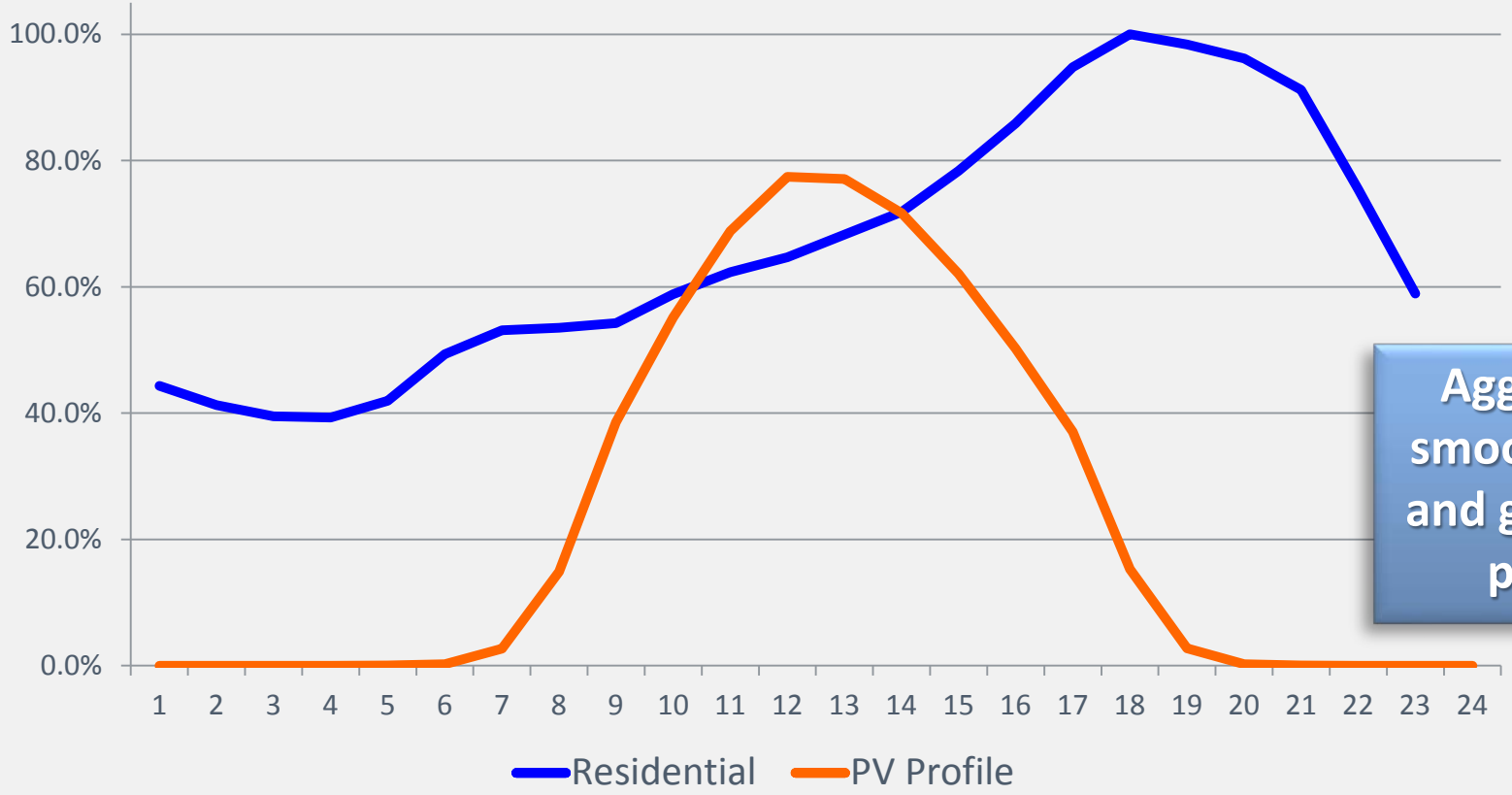

Aggregating smoothes load and generation profiles

Characterization of Residential Load and PV Generation

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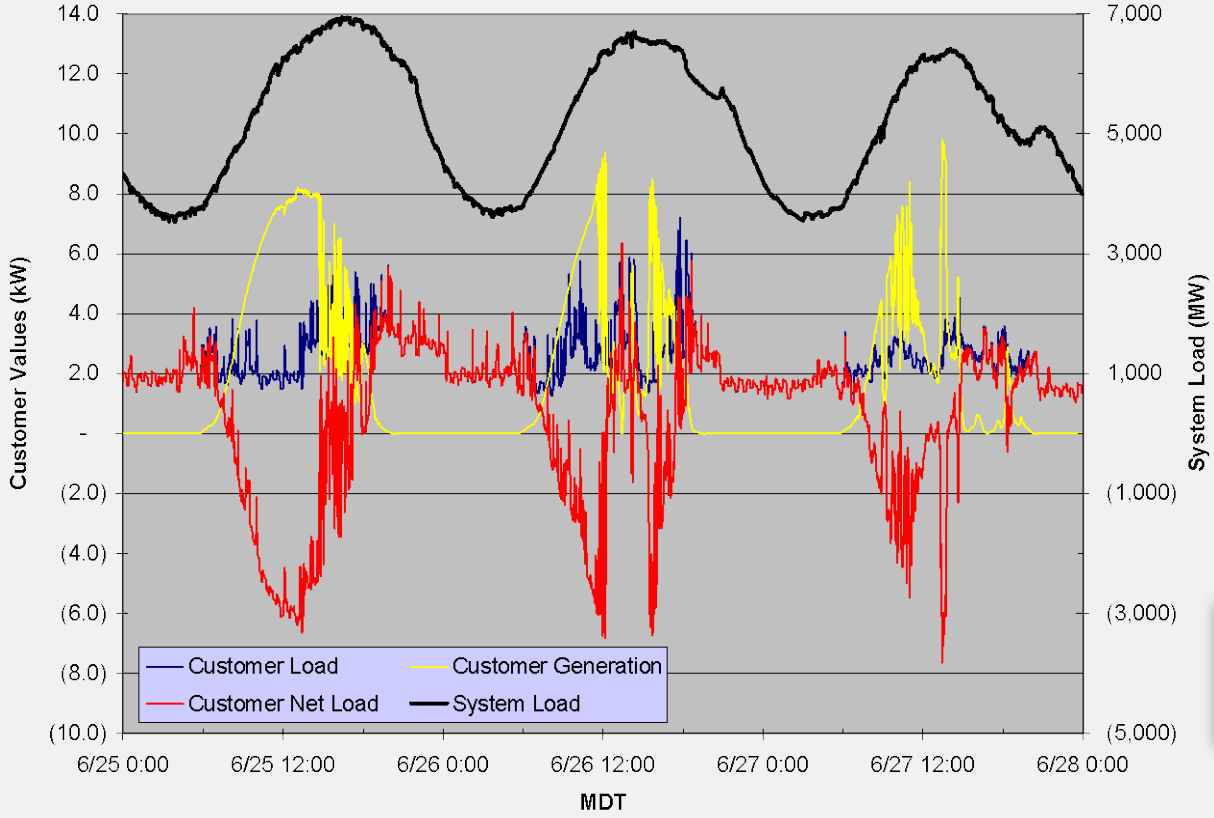

Individual loads and PV generation are quite variable

Note: PV system size > 2x average system size in Utah

Source: Public Service Company of Colorado DSG Study, 2013

Residential Takeaways

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- Variability of customer load is similar to variability of solar generation
- Aggregation of diverse loads and generation sources enhances system efficiency

Appliances	Watts
Central A/C (3.5 ton)	6,500
Evaporative Cooler	400
Range	4,500
Clothes Dryer	3,400
Dishwasher	1,800
Hair Blow Dryer	1,600
Water Heater	2,475
Well Pump	2,238
Coffee Maker	1,200
Microwave Oven	1,450
Toaster Oven	1,550
Kiln	5,760

Unpacking Commercial & Industrial

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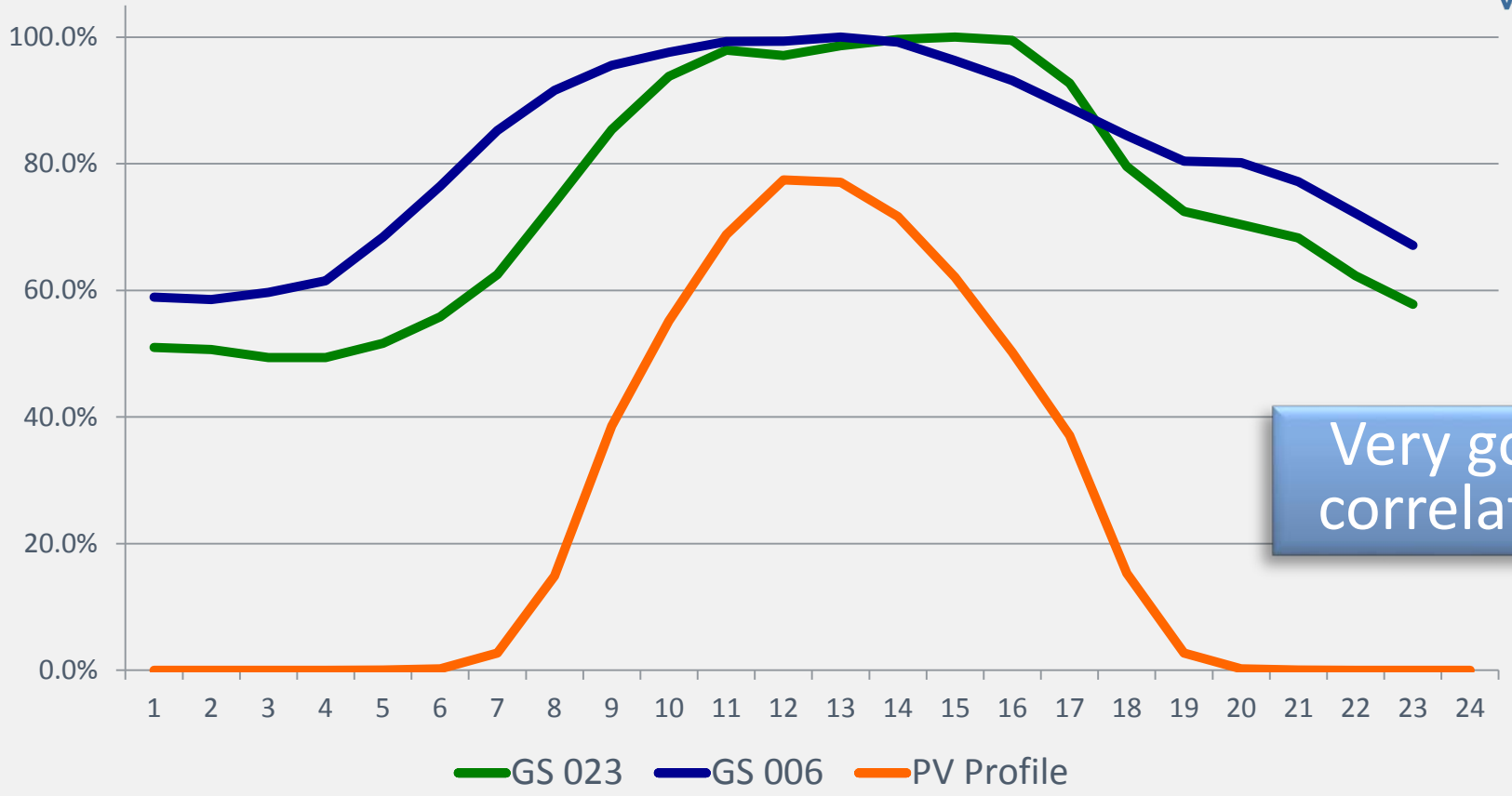

Very good correlation

C&I Customers Continue to Pay Nearly All Fixed Costs

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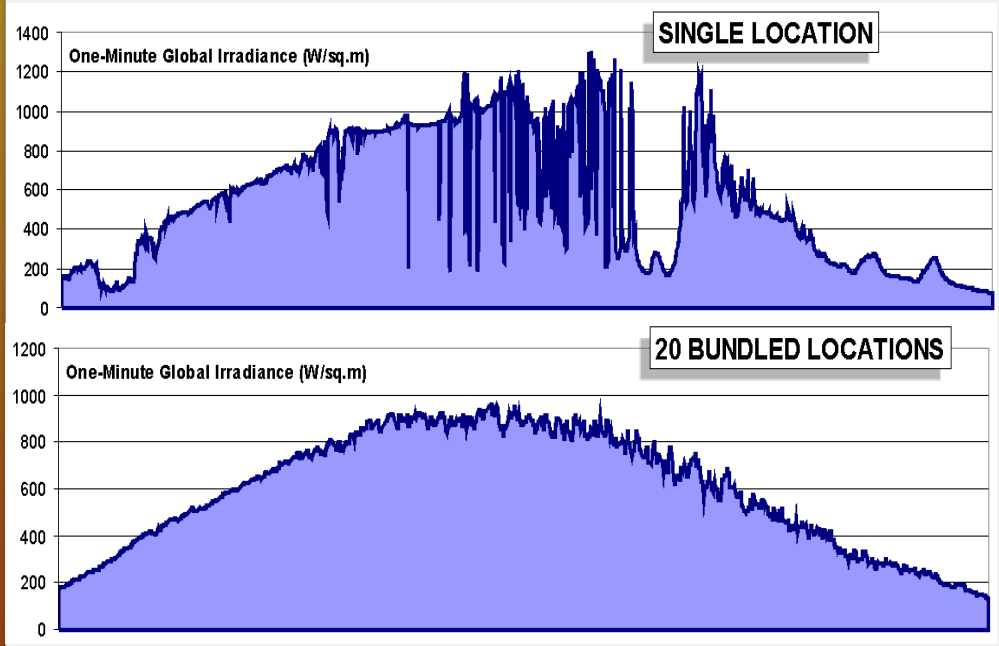
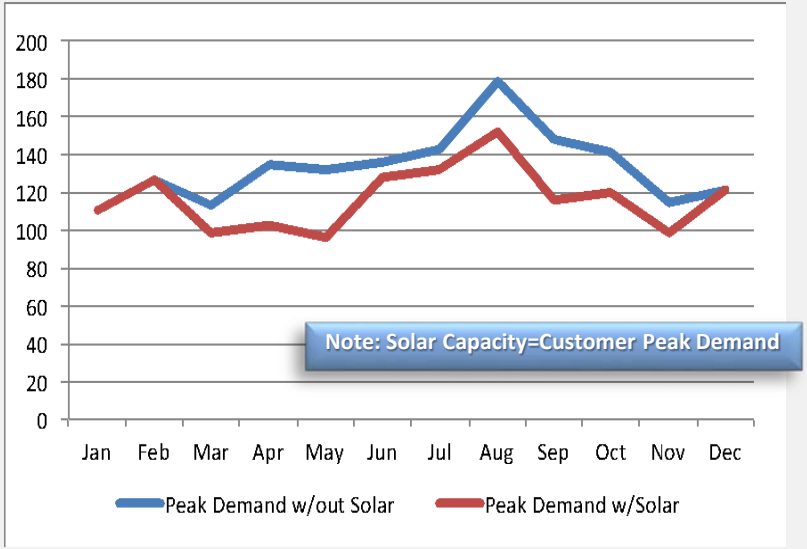
Fixed cost recovery: Intermittency *helps* utility





Billing demand reduced by ~9% of PV system size

Source: Navigant for APS, December, 2012

Source: Public Utilities Fortnightly, February, 2009

Commercial & Industrial Takeaways

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- Load profiles are more coincident with solar generation curve
- Rate schedules usually include demand charges
  - Solar provides little demand charge reduction
- Mixed use development will expand diversity of customer types on distribution circuits

PV Capacity Reduces Costs Assigned to Utah Ratepayers

(based on average of monthly peak days)

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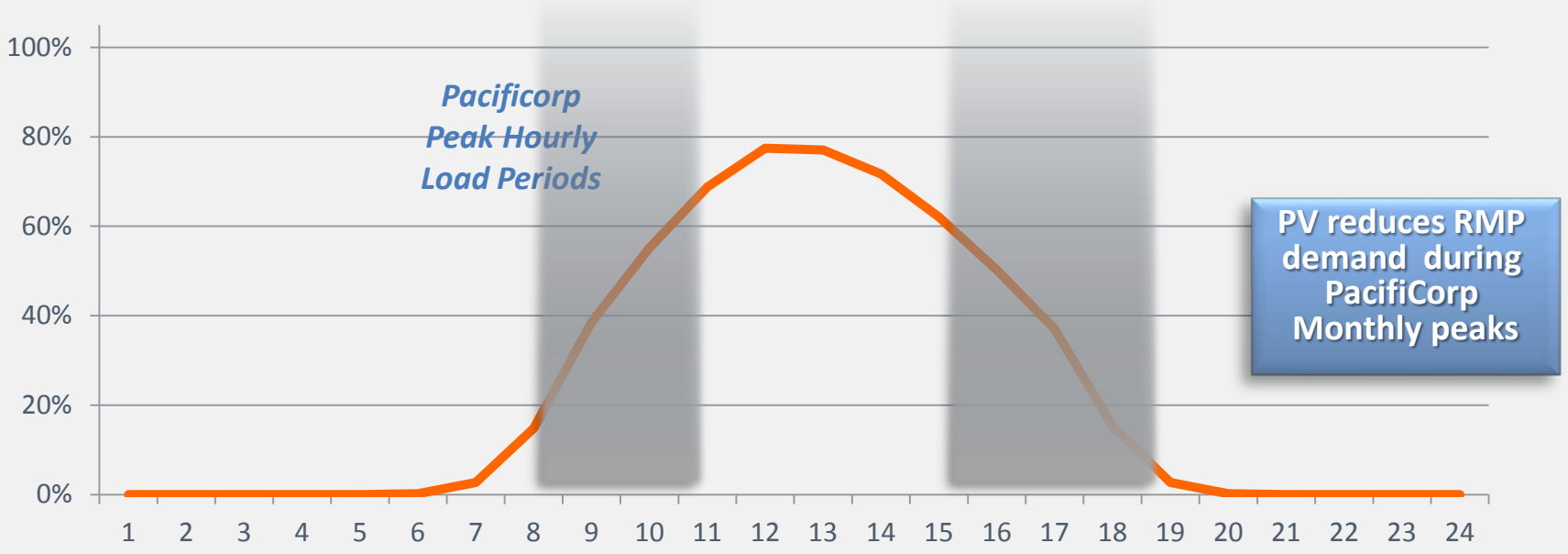

More solar in Utah means lower costs for RMP Customers!

Summary

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- Diversity mitigates intermittency/variability from the system perspective of both loads and resources.
- C&I customer loads are well correlated with solar generation, but solar results in little demand charge savings on C&I electric bills => low cost to RMP
- Cost/benefit analysis must be comprehensive
  - Across all functions (PTD) and across all customer classes
- Solar reduces costs assigned to all RMP ratepayers

Thank You!