ercot

Session 8: Changing Markets – Reliability, Economics and Forecasting in a Wind, Solar and Storage Future

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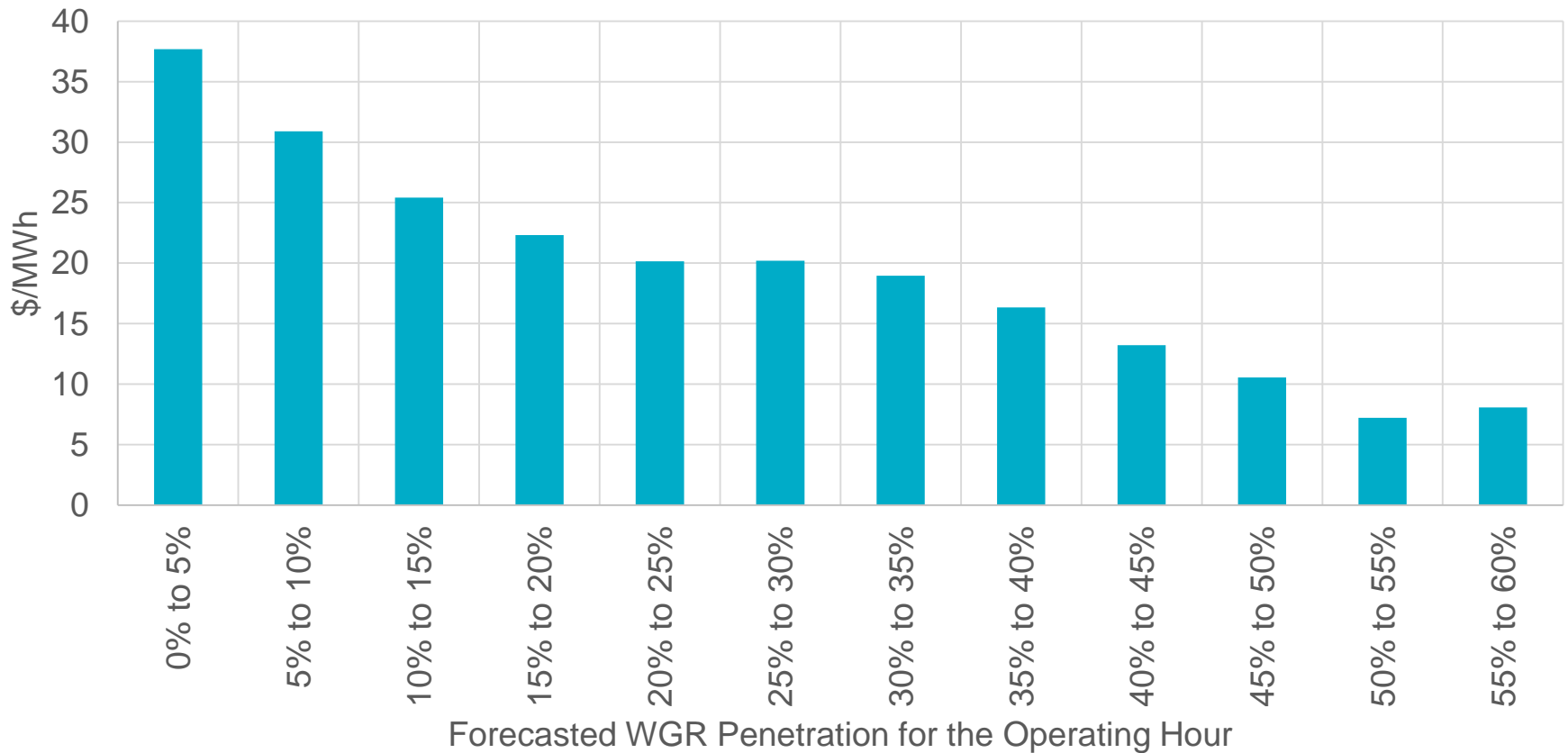
UVIG Forecasting Workshop and Tutorial
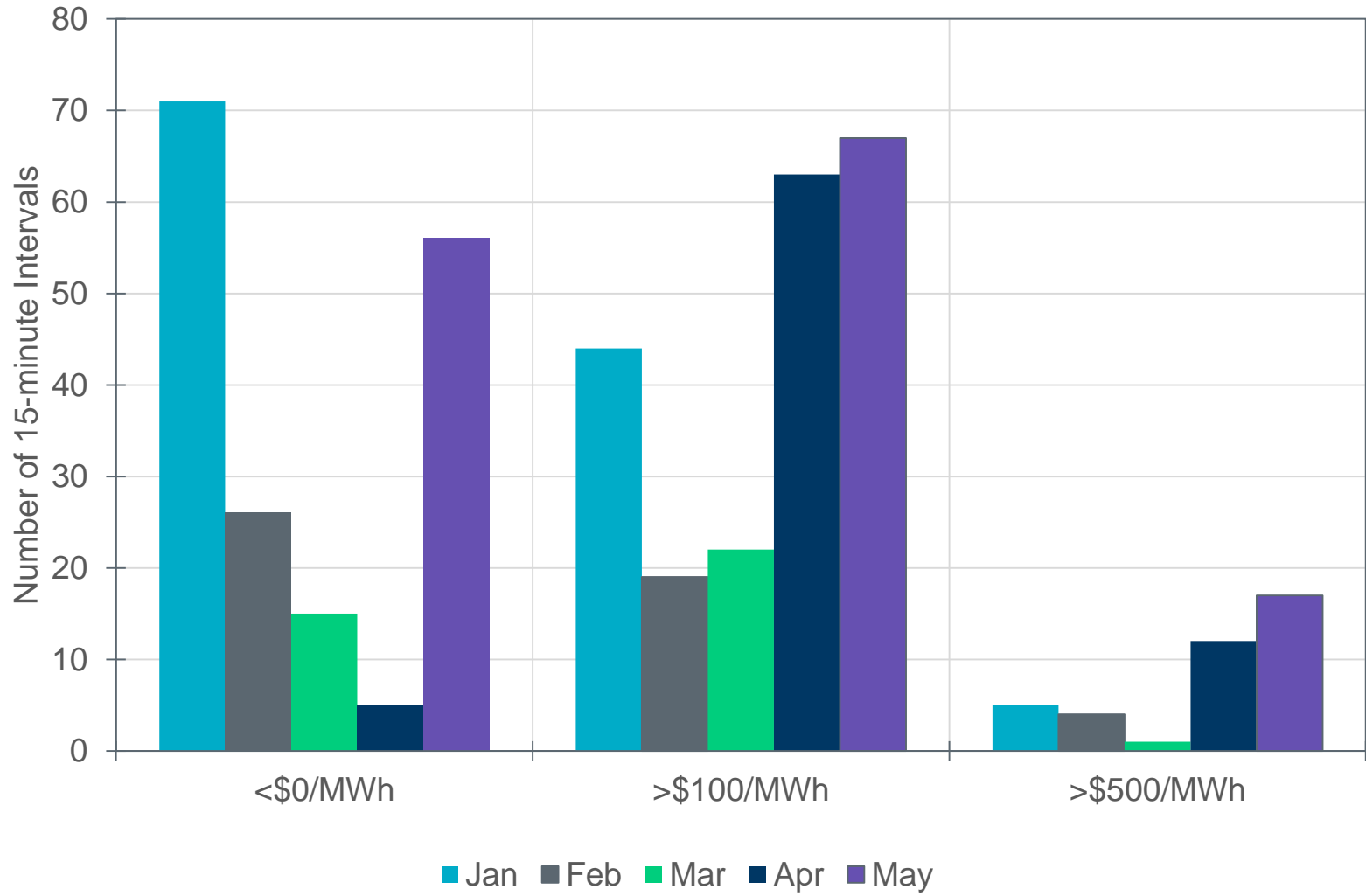June 20-22, 2017
Atlanta, GA

Introduction

- There are a variety of ways to analyze how the electricity markets are changing in response to the increased levels of Intermittent Renewable Resources (IRRs) on the electric grid.

- Of the questions posed for the session, the focus here will be on how the value of Ancillary Services (AS) is related to expected IRR penetration.

  – Specifically focus on Wind-powered Generation Resources for this presentation

Relationship between Day-Ahead Energy Prices and Projected WGR Penetrations Levels

Average DAM Hub Average LMPs vs. Forecasted WGR Penetration
May '16 - April '17

Chart: bar chart with Y-axis labeled "$/MWh" (0 to 40) and X-axis labeled "Forecasted WGR Penetration for the Operating Hour"

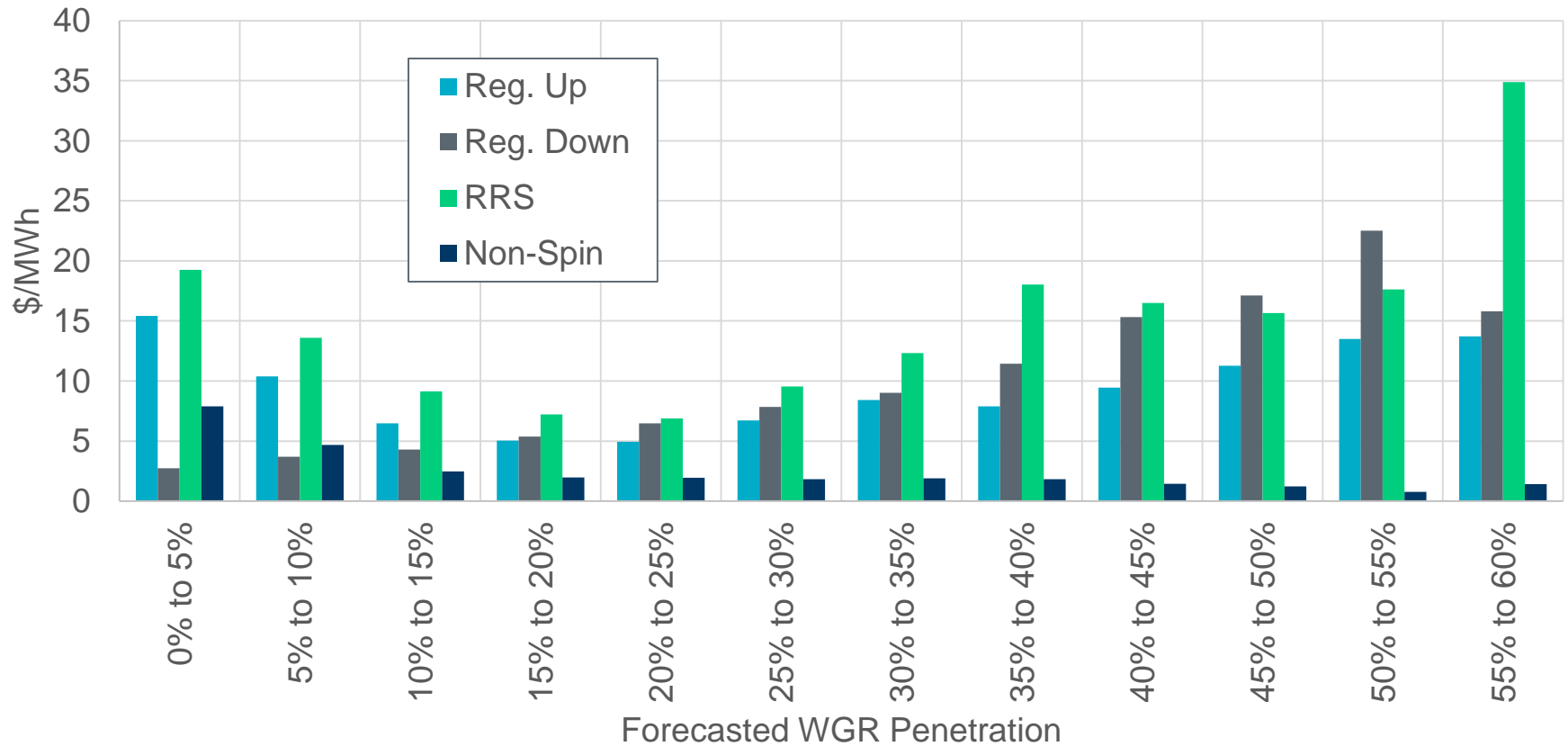| Forecasted WGR Penetration	$/MWh (approx)
0% to 5%	38
5% to 10%	31
10% to 15%	25.5
15% to 20%	22.5
20% to 25%	20
25% to 30%	20
30% to 35%	19
35% to 40%	16.5
40% to 45%	13
45% to 50%	10.5
50% to 55%	7
55% to 60%	8

Real-Time Hub Average Prices for 2017

Relationship between Day-Ahead Ancillary Service Prices and Projected WGR Penetrations Levels

Average DAM Ancillary Service Prices vs. Forecasted WGR Penetration
May '16 - April '17
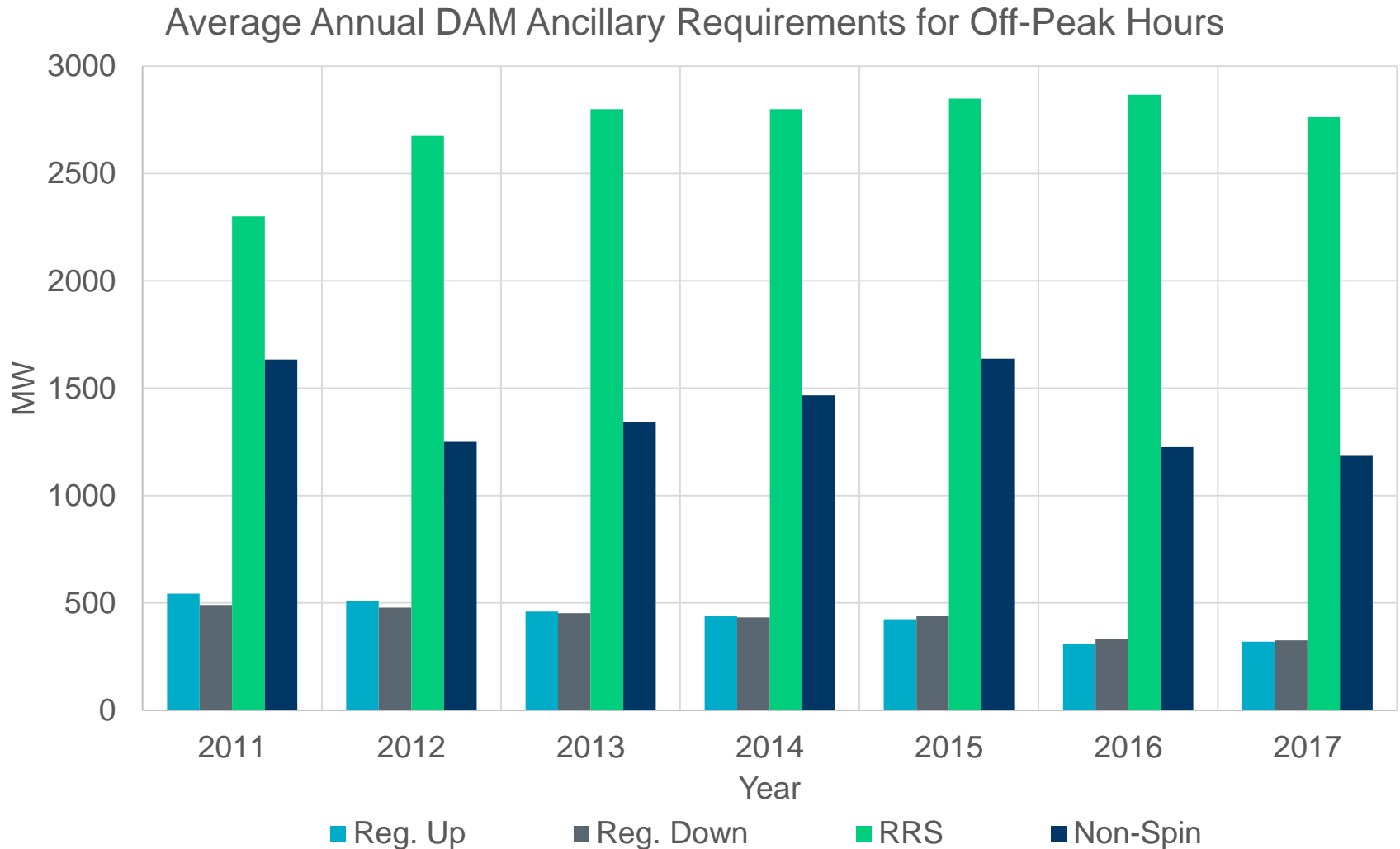
Relationship between Day-Ahead Ancillary Service Prices and Projected WGR Penetrations Levels

Average DAM Ancillary Service Prices vs. Forecasted WGR Penetration for Off-Peak Hours
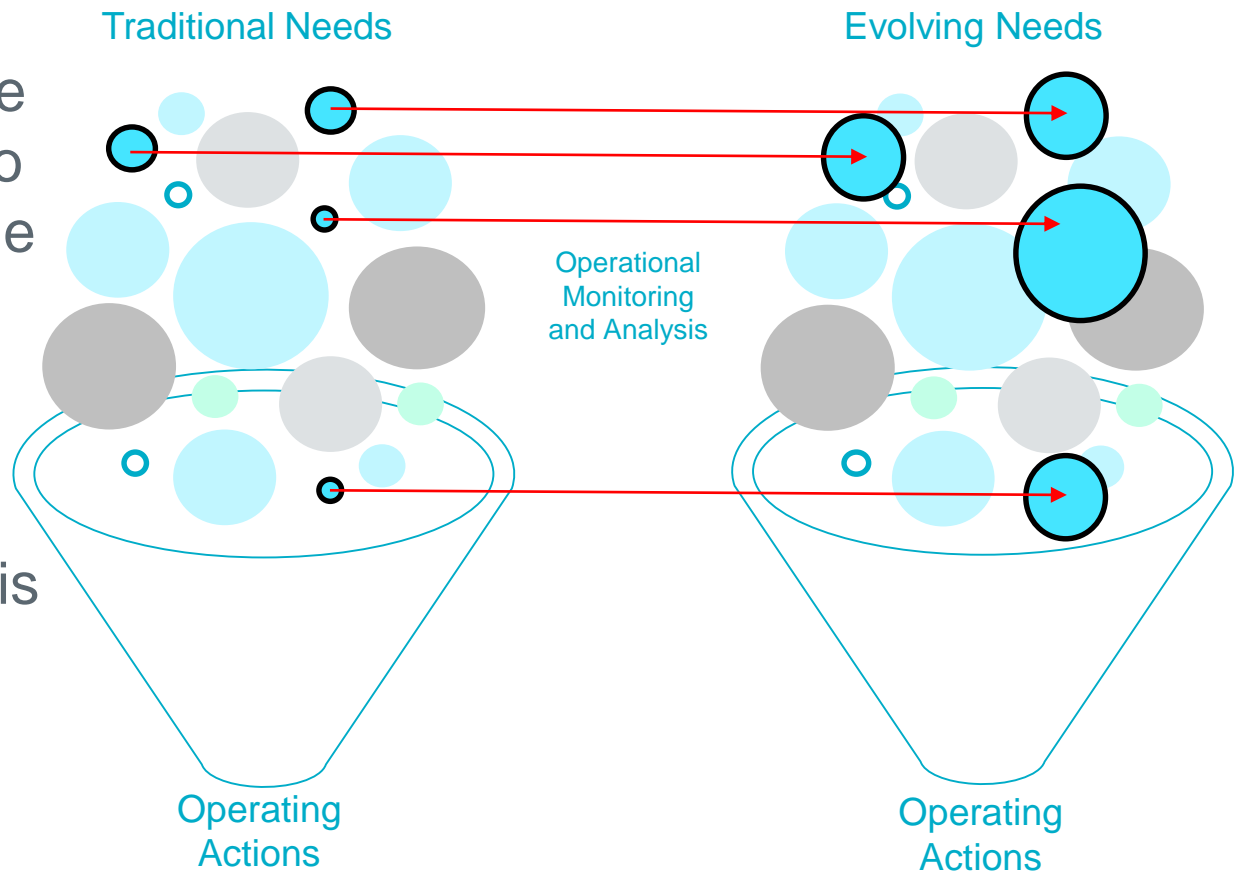May '16 - April '17
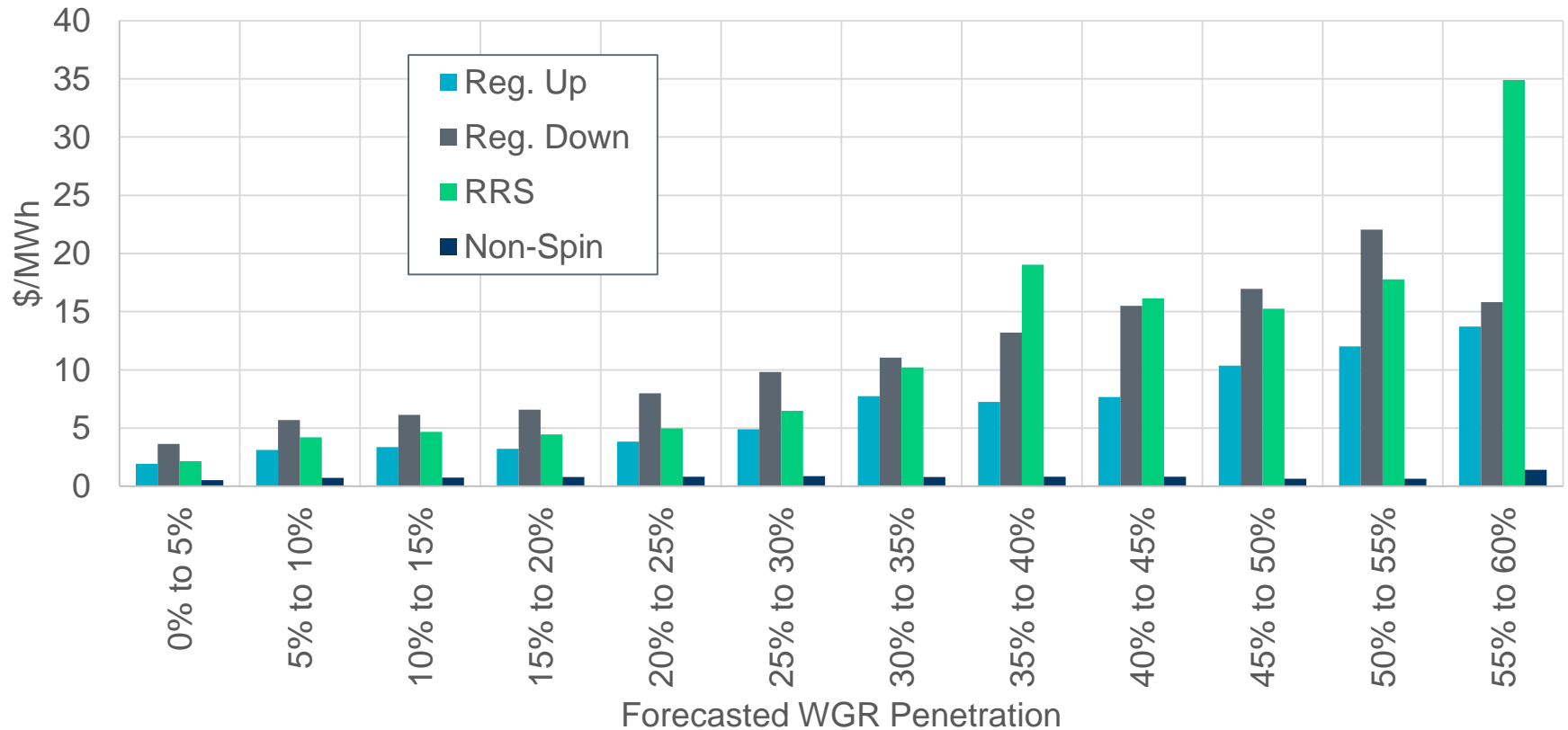
Changes in AS Requirements Over Time

Average Annual DAM Ancillary Requirements for Off-Peak Hours

Evolving Risks

- With the changing resource mix on the system, the need to assess and manage certain risks has grown.

- Improved quantitative analysis and dynamic consideration of these risks and controls are needed.

Traditional Needs

Evolving Needs

Operational Monitoring and Analysis

Operating Actions

Operating Actions

Continued Discussion on AS Changes

- ERCOT continues to review the AS methodology at least annually.

- While the proposal to redesign Ancillary Services (Nodal Protocol Revision Request (NPRR) 667) did not move forward, other more incremental changes to AS are being discussed.

- The Supply Analysis Working Group (SAWG) is also working with ERCOT staff to discuss how the real-time co-optimization of energy and AS could potentially work in the ERCOT market.

Questions?