Requested Analysis on Proposal to Account for the Local Impacts of ERCOT Out-of-Market Actions

Market Analysis

11/12/2018

Introduction

- During the October QMWG meeting there was a request for ERCOT to evaluate a stakeholder's proposal to change the Reliability Deployment Price Adder
  - http://www.ercot.com/calendar/2018/10/15/144527-QMWG

- In place of the current method of a uniform price adder for the entire system, the proposed method would have different price adders across the system to account for locational impacts of ERCOT out-of-market actions

- Instead of using the positive increase in system lambda between the dispatch and pricing runs, the proposed method would use the positive increase in individual LMPs between the dispatch and pricing runs

Initial Analysis

- Analyzed one RUC for congestion
  - With a related transmission constraint active in RT
  - With the RUC Resource dispatched above LDL for a portion of the RUC commitment
  - After June 1, 2018

- Re-ran SCED tool to extract LMPs and calculate price adders
  - Current system-wide price adder method
  - Proposed locational price adder method

Review of the Steps in SCED

- SCED dispatch run
  - Uses SCED Normal (5-minute) ramp rates
  - SCED Step 1 (“SCED 1”): reference LMPs and base points
  - Apply mitigation
  - SCED Step 2 (“SCED 2”): dispatch LMPs and base points

- SCED pricing run
  - Uses relaxed (12 times 5-minute) ramp rates
  - SCED Step 1 (“SCED 3”): new reference LMPs and base points
  - Apply mitigation
  - SCED Step 2 (“SCED 4”): pricing run LMPs and base points

Price Adder Calculations

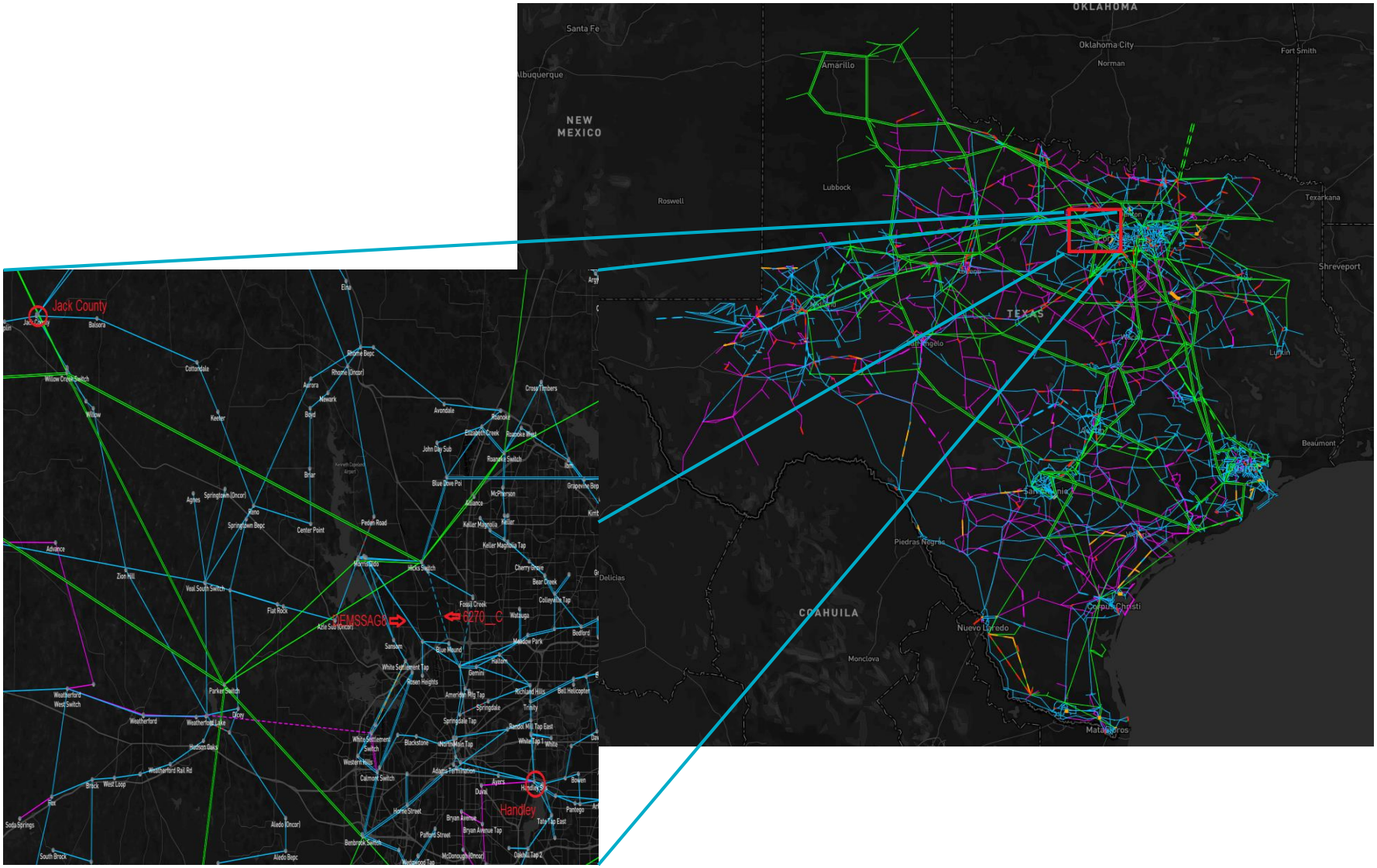
- System-wide price adder calculation
  - Max(pricing run system lambda – dispatch run system lambda, 0)

- Locational price adder calculation
  - Max(pricing run LMP – dispatch run LMP, 0)

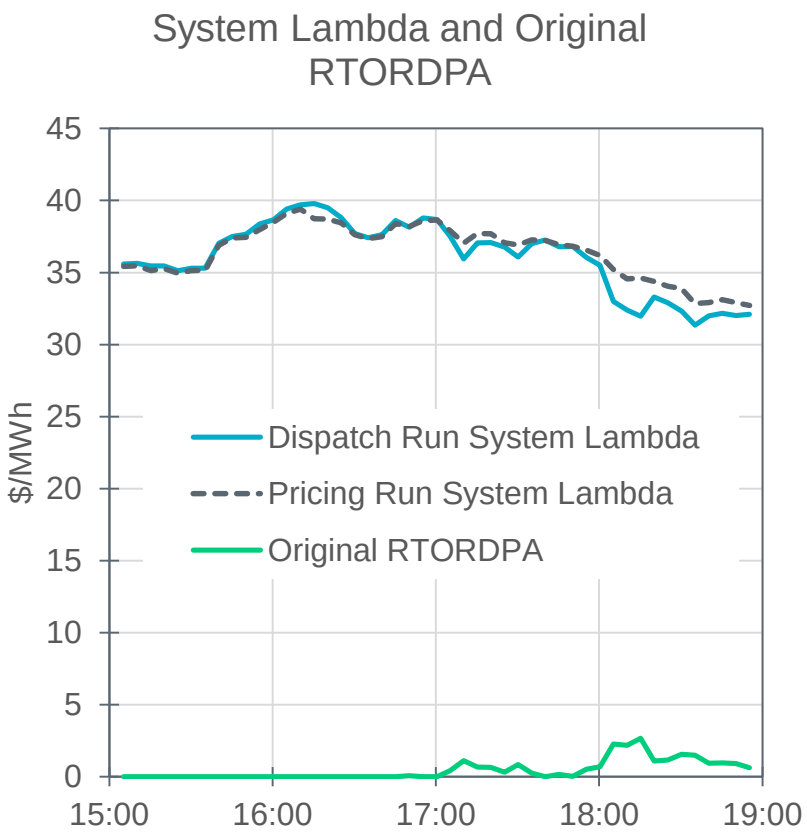
8/28/2018 HE 16-19

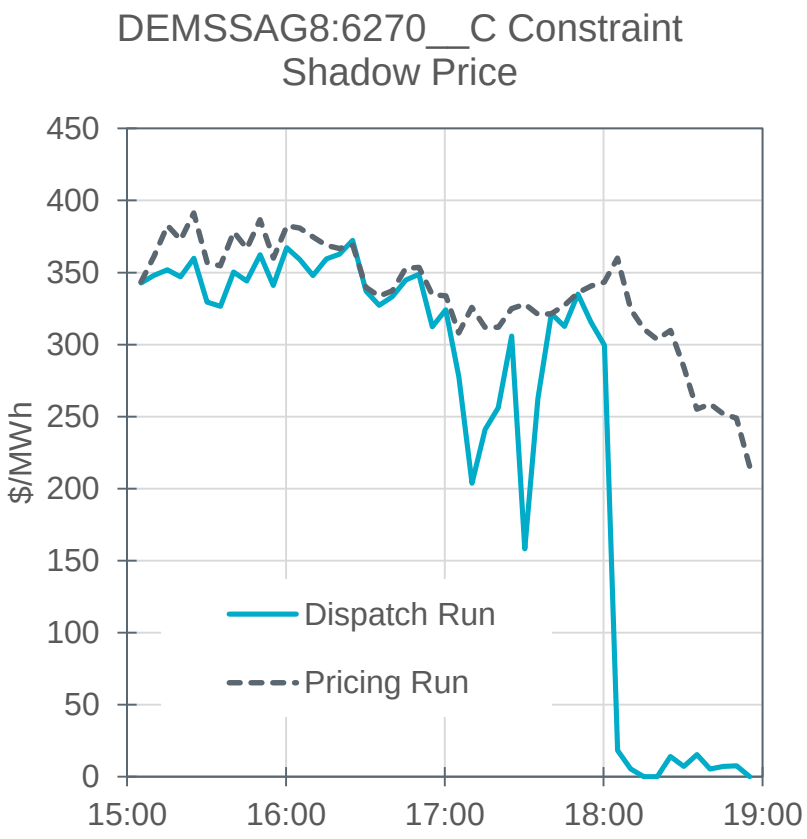
- RUC of HLSES_UNIT4 (435 MW) for HE16-19
- For the contingency constraint loss of Eagle Mountain to Saginaw Switch 138 kV overloads Wagley Robertson to Blue Mound 138 kV (DEMSSAG8:6270__C)
- HLSES_UNIT4 had a -4.8% shift factor to the constraint
- Constraint was binding the majority of HE 16-19 with shadow prices mostly in the $300-400/MWh range.

Locations of Resources near Constraint

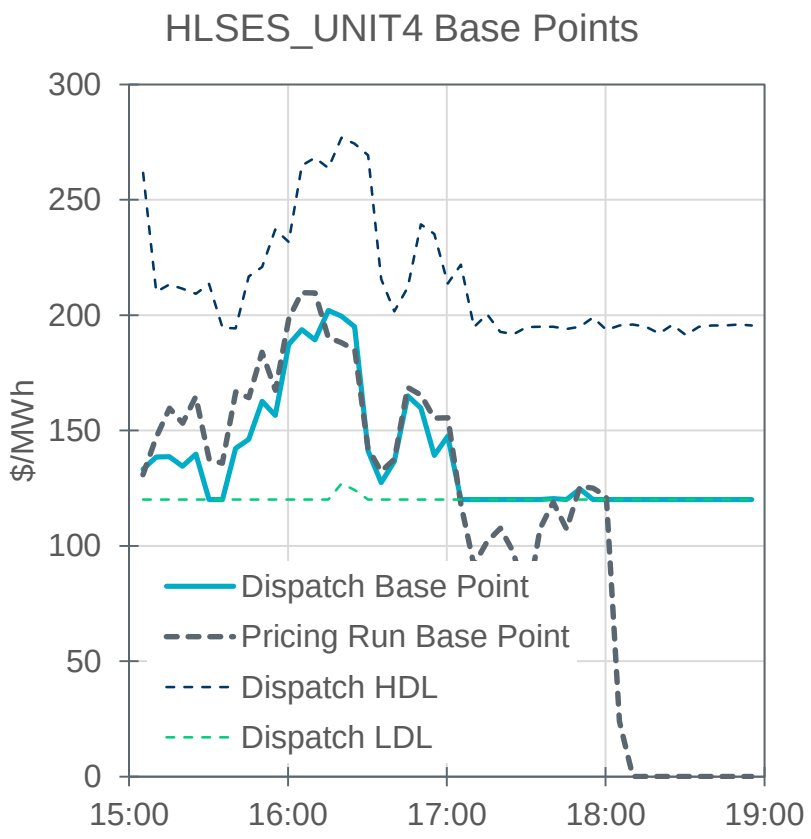


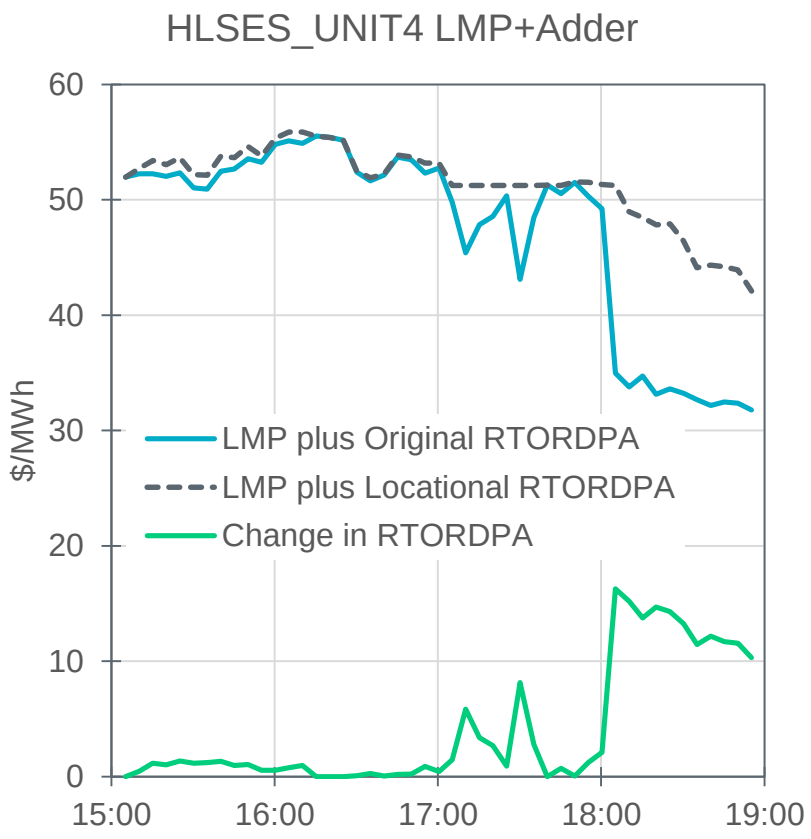
System-Level Results



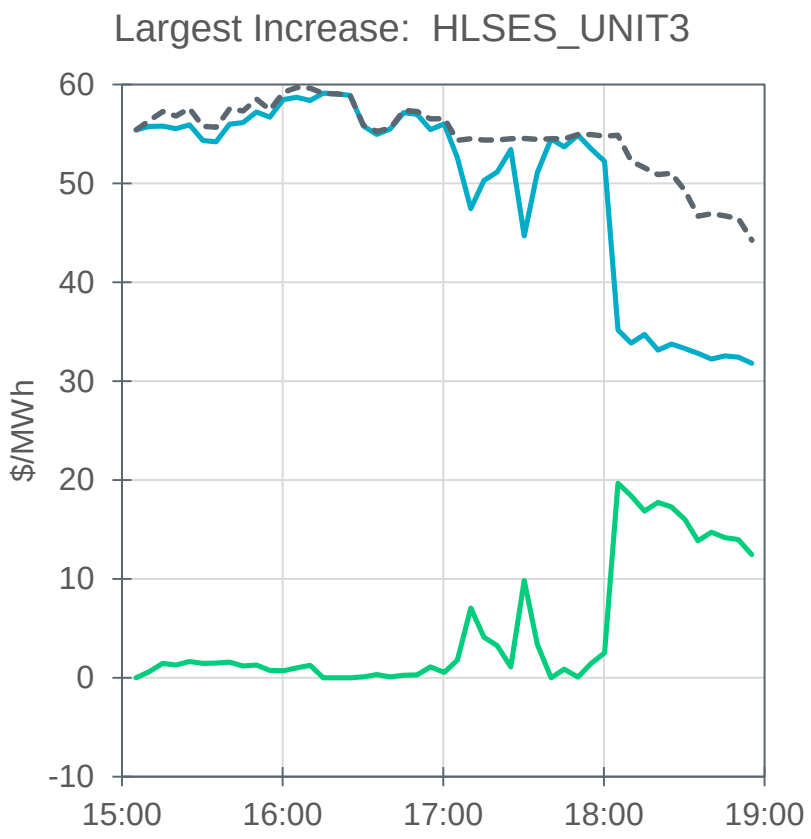


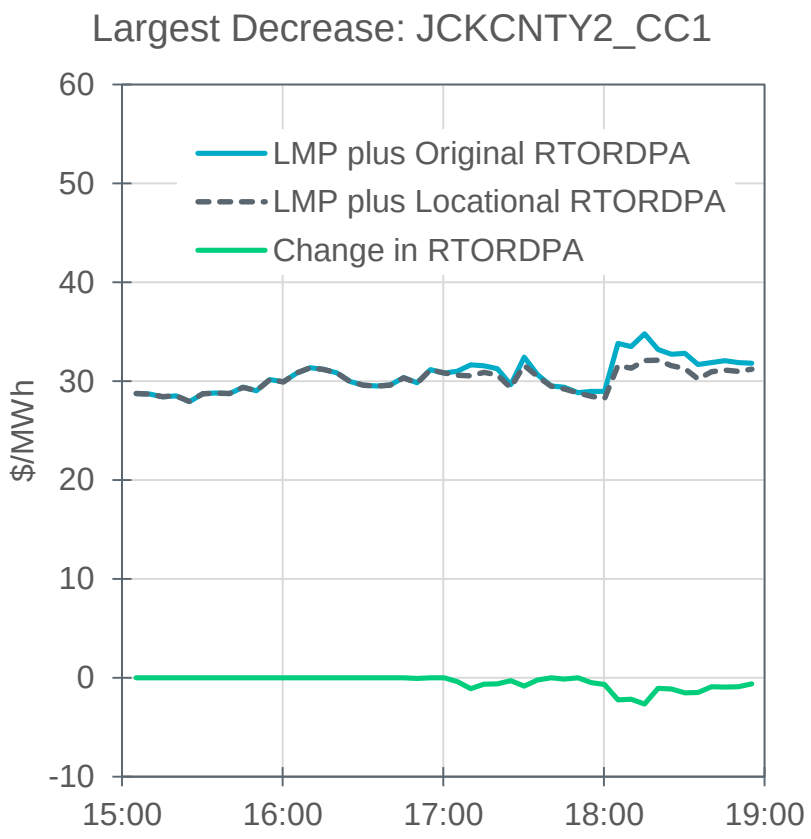
Impact on RUC'ed Resource LMP + Adder





Largest Changes in LMP + Adder Values

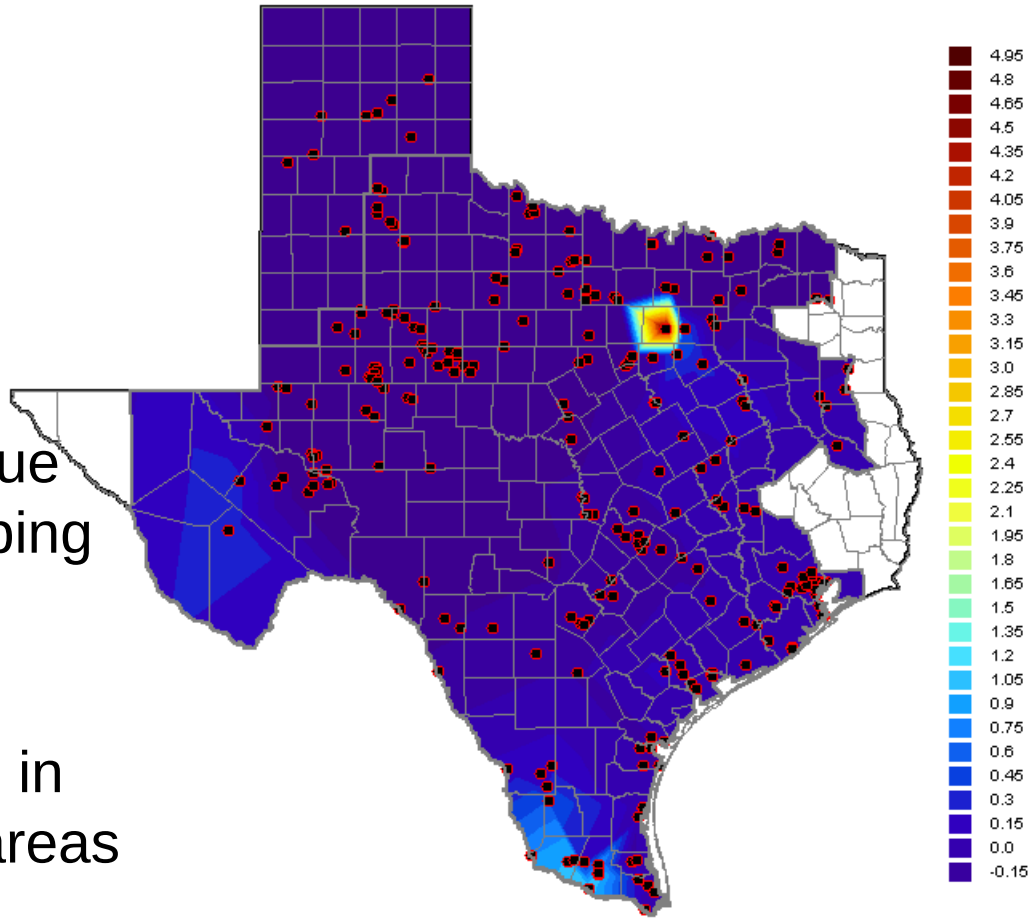




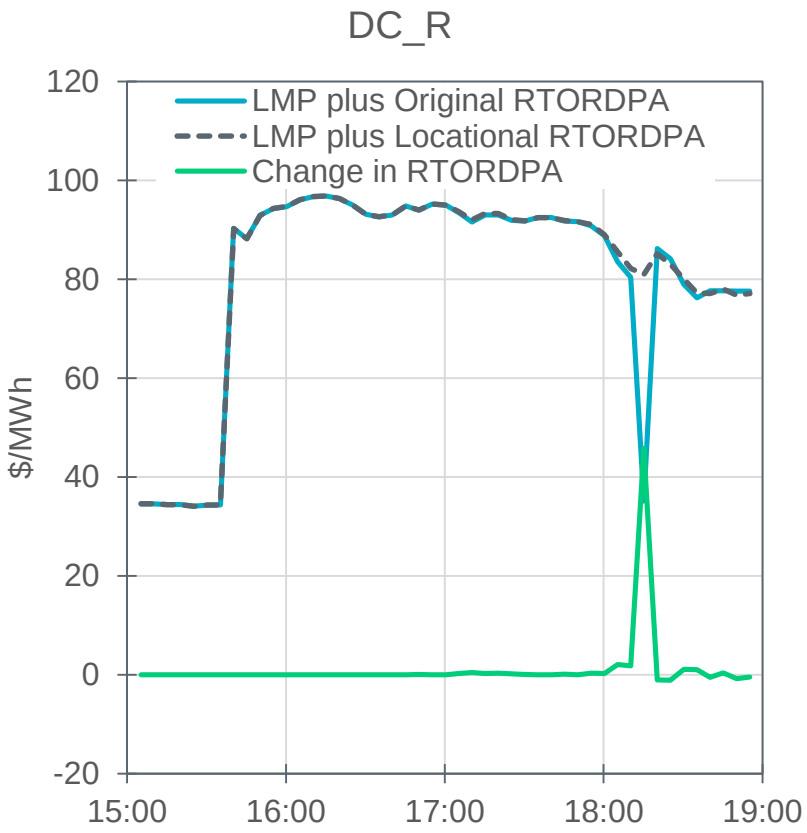
Average Change in Price Adder by Settlement Point

- Proposed method does increase adders at RUC Resource and decrease adders elsewhere.
- This example shows very localized price increase due to few resources with helping shift factors
- There are price increases in the Valley and Far West areas that are not related to the RUC Resource or constraint

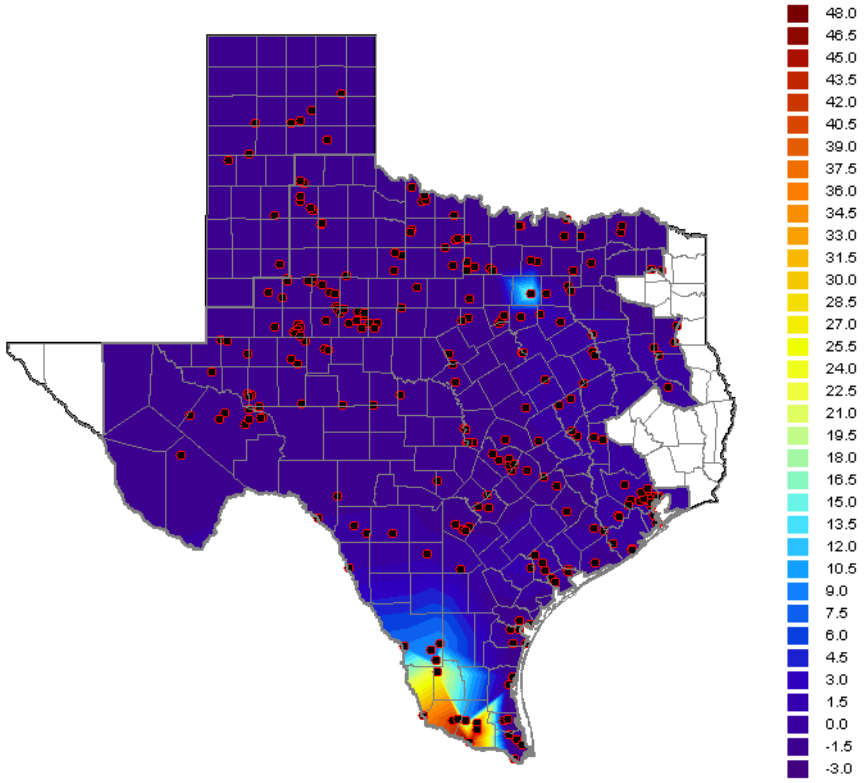
Average change in RTORDPA for HE16-19



Increase in Valley Area

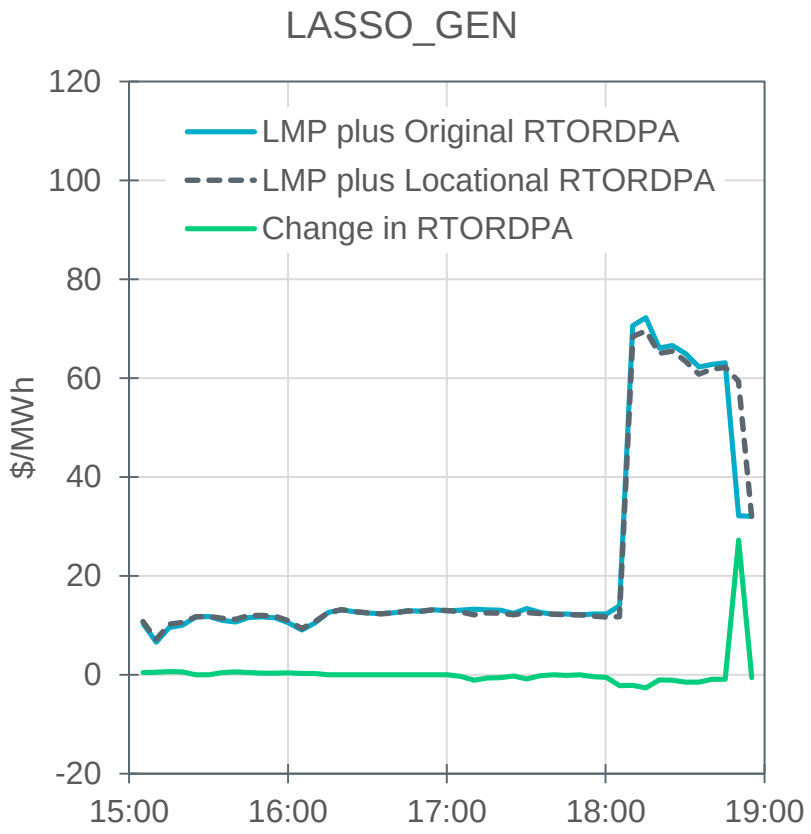


Change in RTORDPA for the 18:15 SCED interval

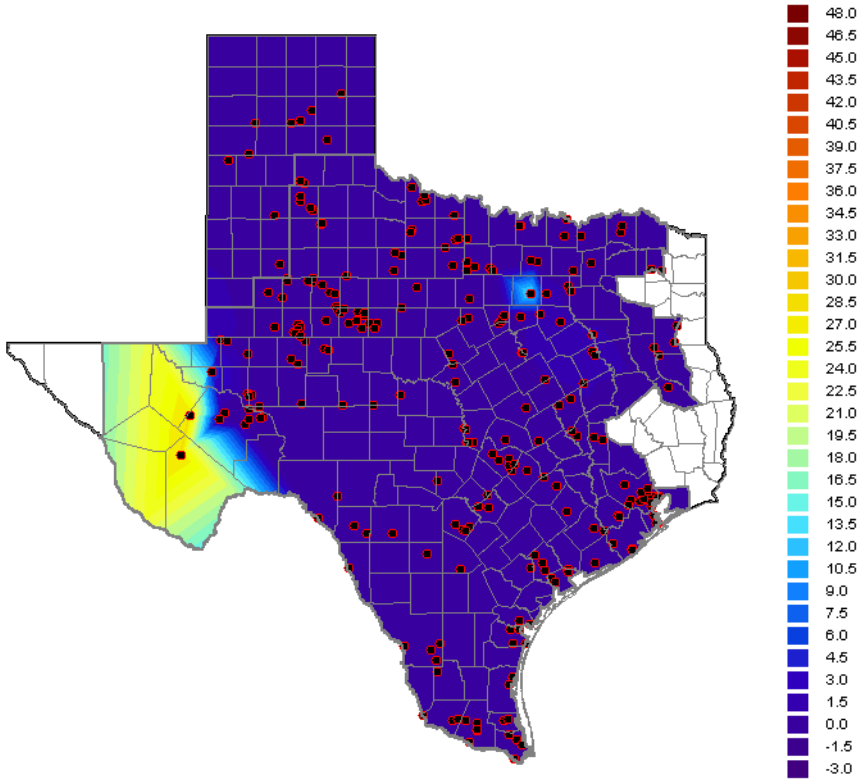


Note that the scale is different from the previous slide.

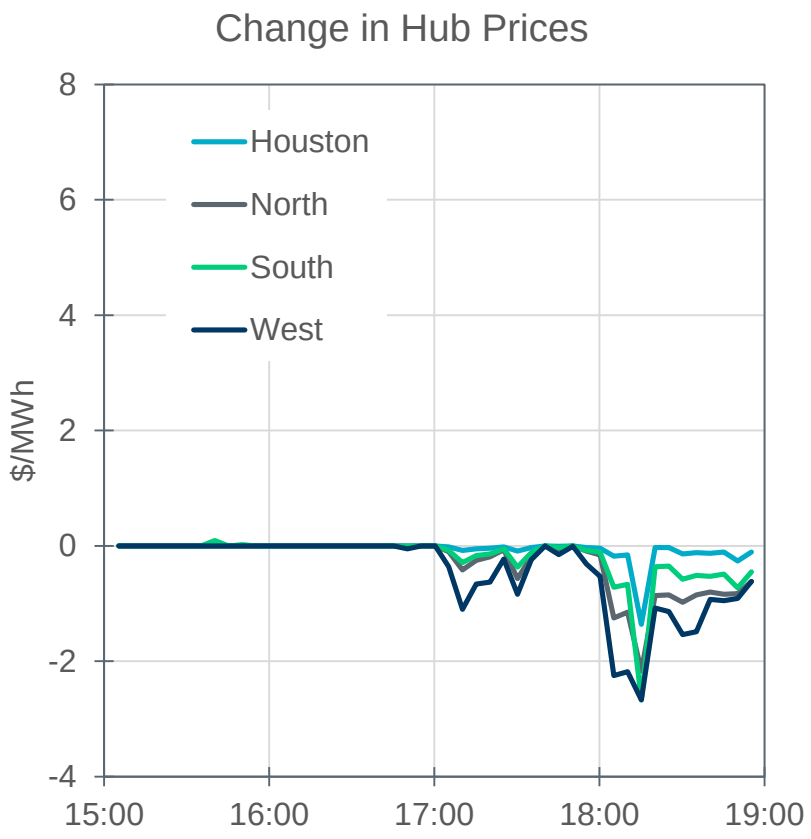
Increase in Far West Area

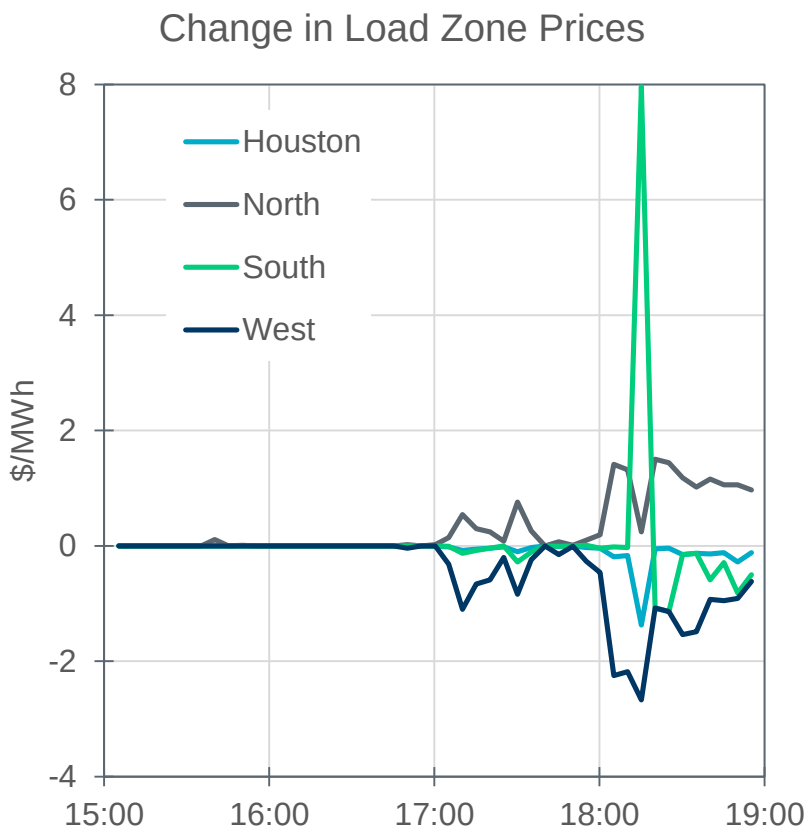


Change in RTORDPA for the 18:50 SCED interval



Hub and Load Zone Price Changes





Observations

- In this example, the proposed method generally concentrated adders near the RUC'ed Resource and reduced adders elsewhere in the system
  - There are few Resources with helping shift factors to this particular constraint
- This example also identified other non-intended outcomes due to the current implementation of the pricing run