Comment Received From: Steve Uhler
Submitted On: 2/14/2017
Docket Number: 17-IEPR-02

Clean Duck, Dirty Duck

Clean Duck, Dirty Duck

Attention needs to be paid to the percentage of renewables during large ramps.

In the attached charting of CAISO ramps >10GW, you will find days where the renewable percentage is higher than 20% and days that are lower than 20%.

You can find the attached as a web page at http://ugemrp.com/caiso/dashboard/stats/ramp_3h_max.svg

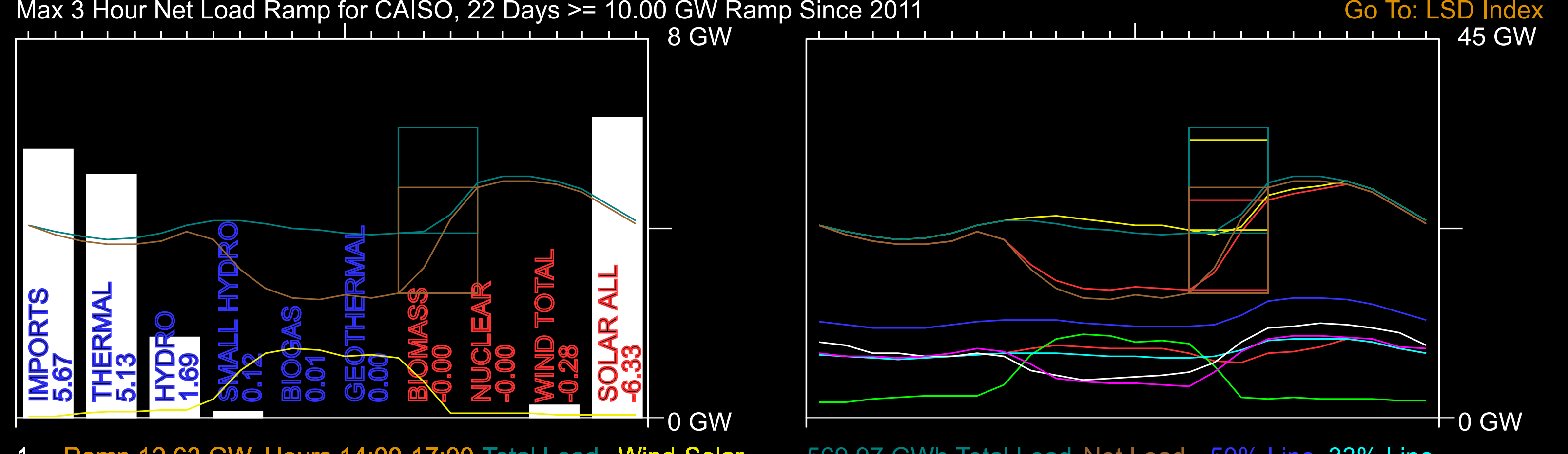
thanks,

Steve Uhler
DeRe@ugemrp.com

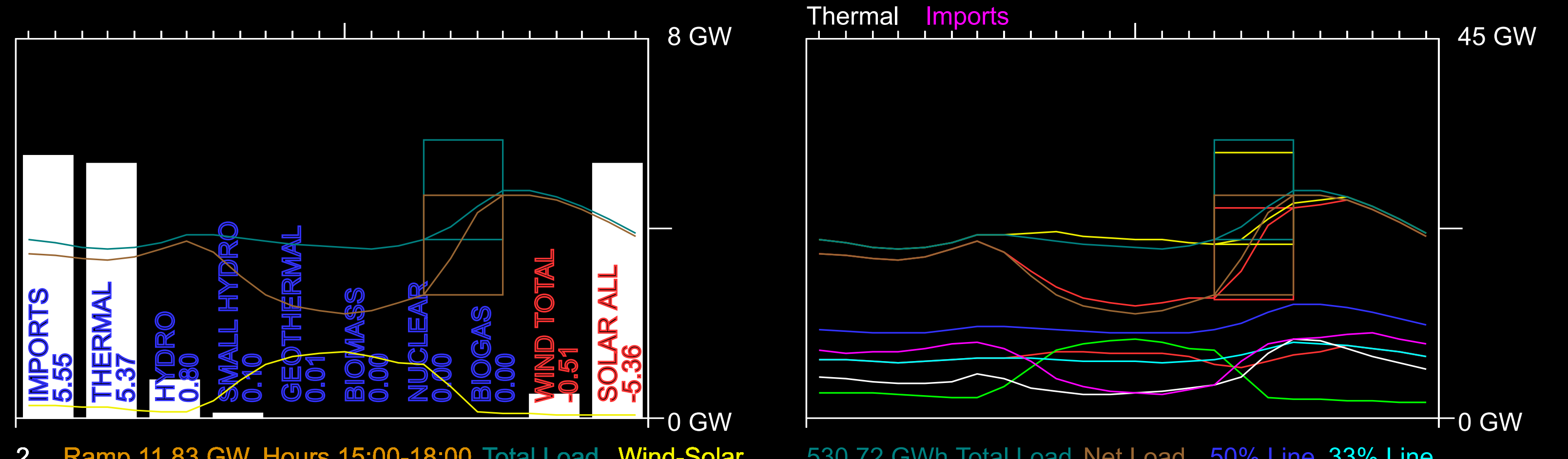
Additional submitted attachment is included below.

Max 3 Hour Net Load Ramp for CAISO, 22 Days >= 10.00 GW Ramp Since 2011

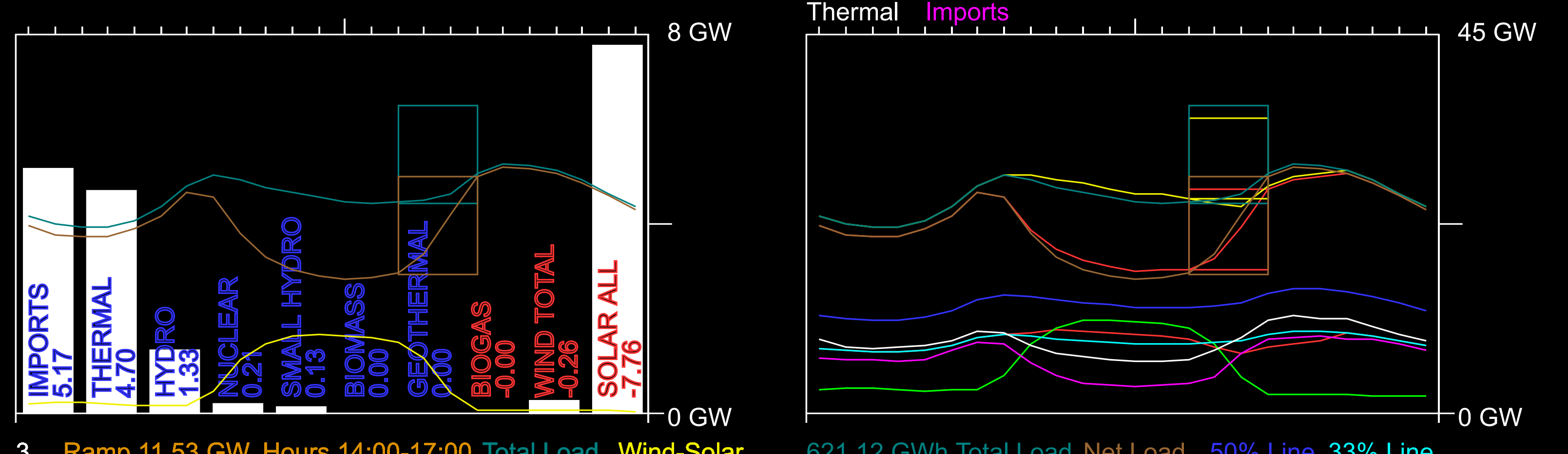
Go To: LSD Index



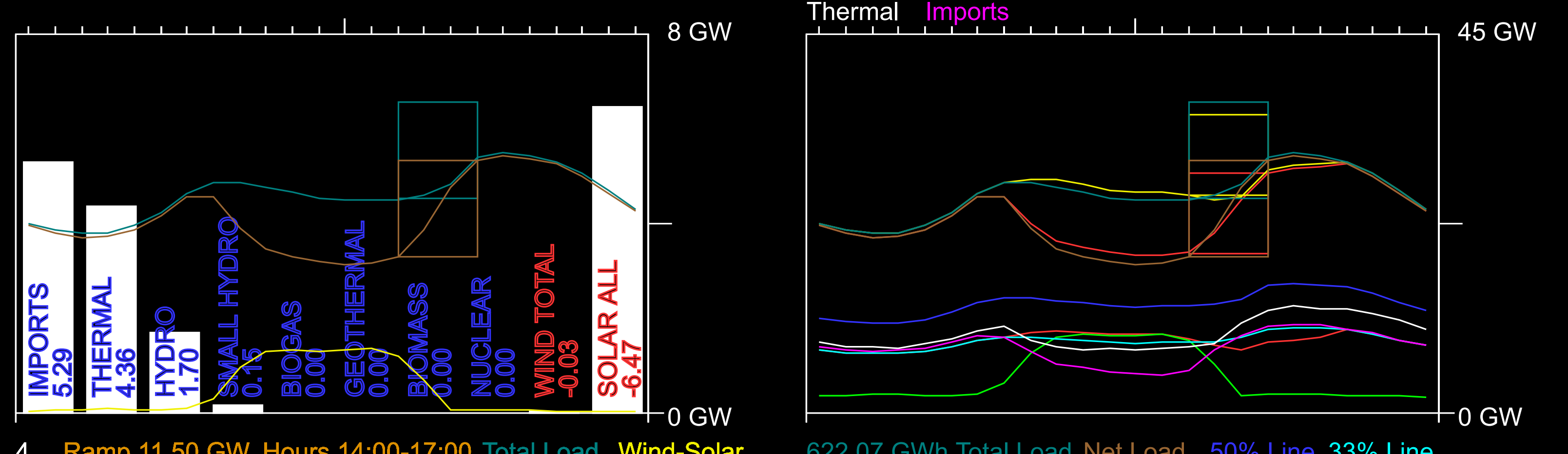
1. Ramp 12.63 GW, Hours 14:00-17:00 Total Load Wind-Solar
Sun - 12/18/2016 (data) Output Change Net Load Min: 14.12 GW
569.97 GWh Total Load Net Load 50% Line 33% Line
19.02% Renewable 108.41GWh Opportunity Line Result Line
Thermal Imports



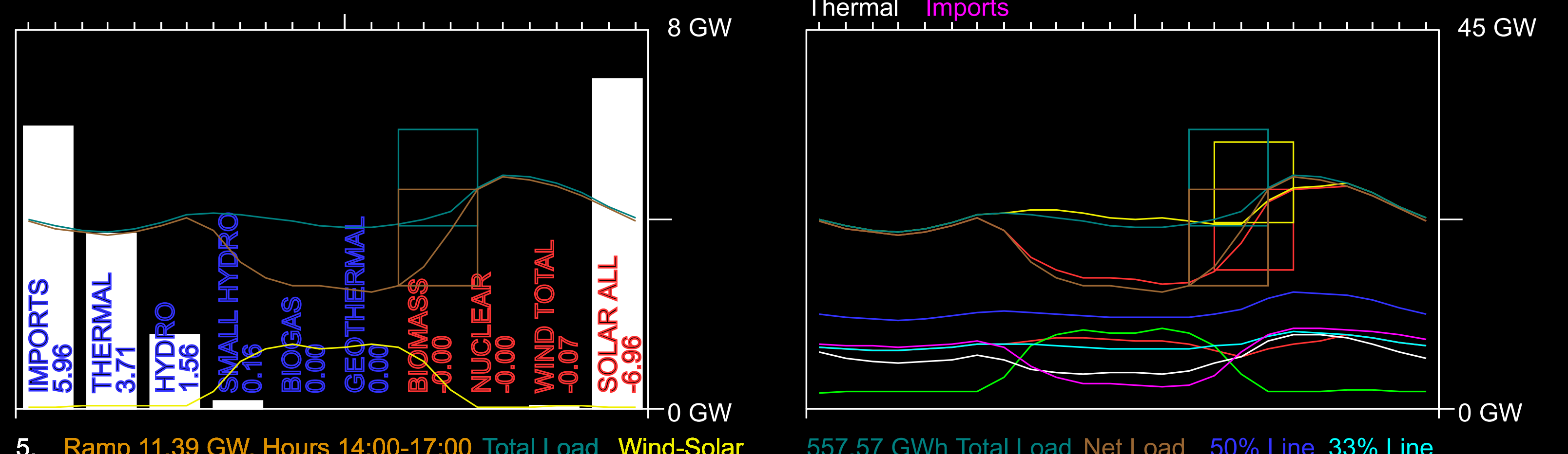
2. Ramp 11.83 GW, Hours 15:00-18:00 Total Load Wind-Solar
Sun - 02/12/2017 (data) Output Change Net Load Min: 12.36 GW
530.72 GWh Total Load Net Load 50% Line 33% Line
20.74% Renewable 110.09GWh Opportunity Line Result Line
Thermal Imports



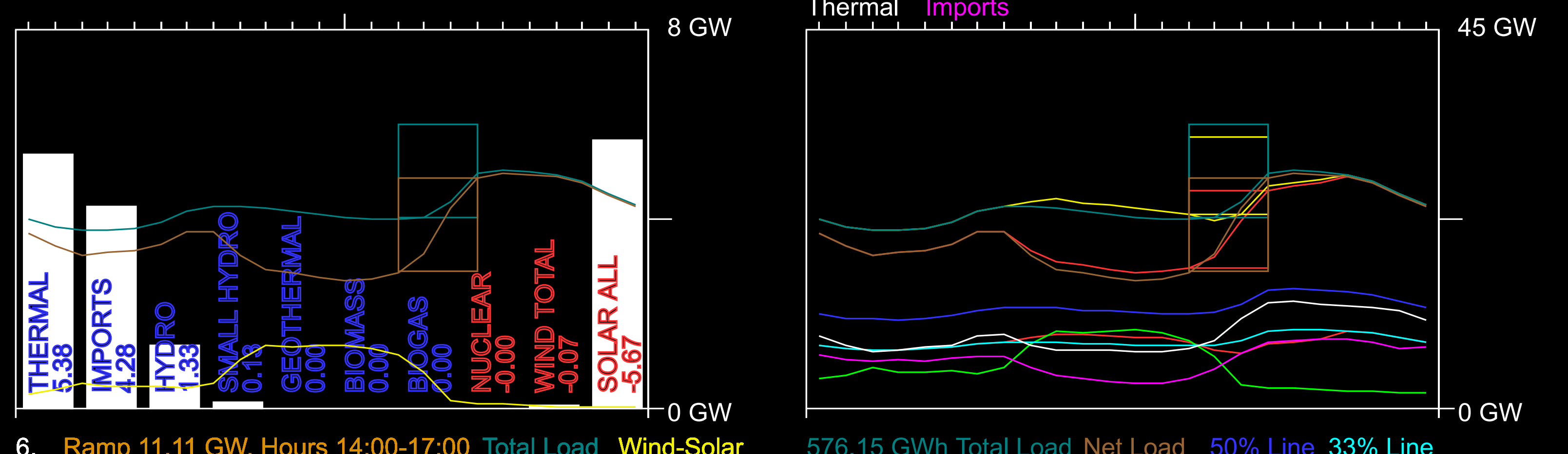
3. Ramp 11.53 GW, Hours 14:00-17:00 Total Load Wind-Solar
Fri - 01/27/2017 (data) Output Change Net Load Min: 15.88 GW
621.12 GWh Total Load Net Load 50% Line 33% Line
19.98% Renewable 124.10GWh Opportunity Line Result Line
Thermal Imports



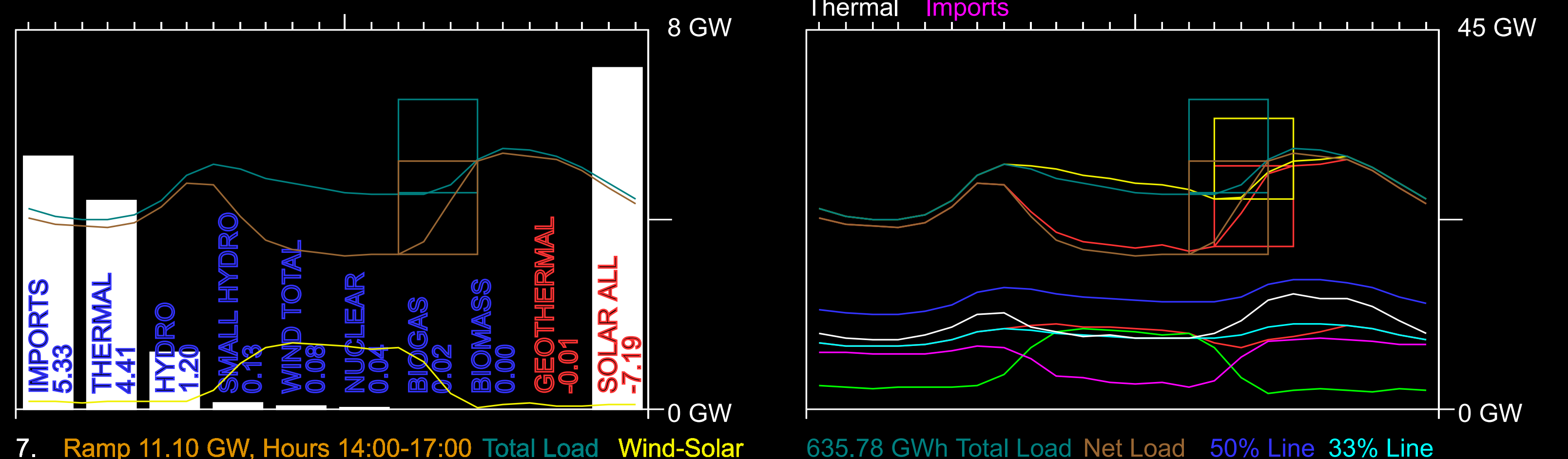
4. Ramp 11.50 GW, Hours 14:00-17:00 Total Load Wind-Solar
Mon - 12/19/2016 (data) Output Change Net Load Min: 17.69 GW
622.07 GWh Total Load Net Load 50% Line 33% Line
16.60% Renewable 103.24GWh Opportunity Line Result Line
Thermal Imports



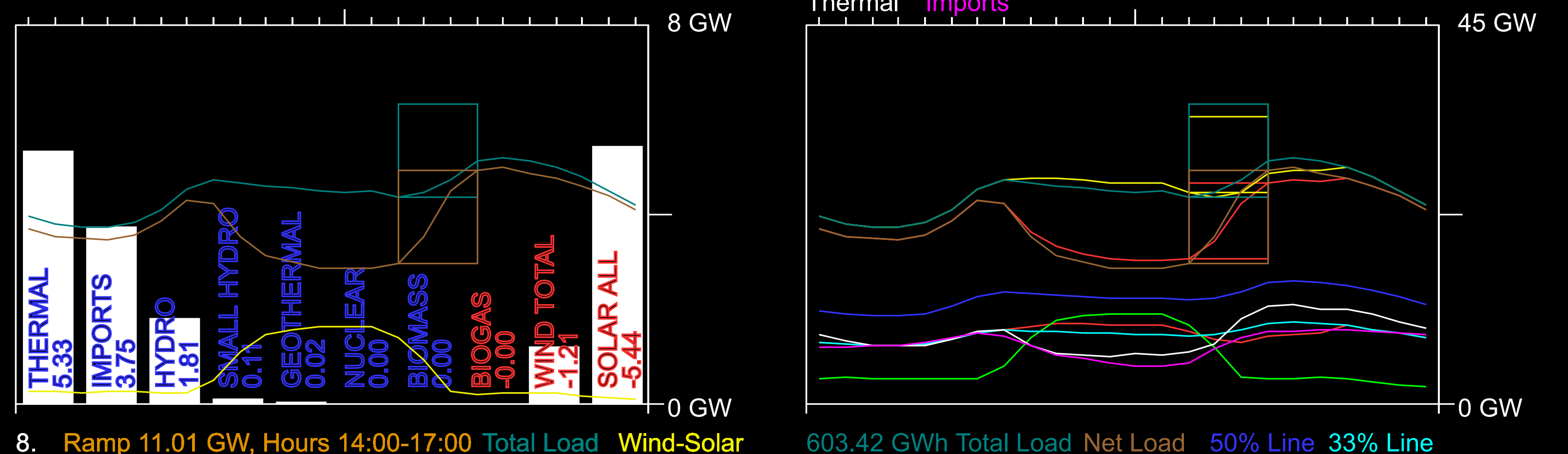
5. Ramp 11.39 GW, Hours 14:00-17:00 Total Load Wind-Solar
Sun - 01/29/2017 (data) Output Change Net Load Min: 13.88 GW
557.57 GWh Total Load Net Load 50% Line 33% Line
19.19% Renewable 107.01GWh Opportunity Line Result Line
Thermal Imports



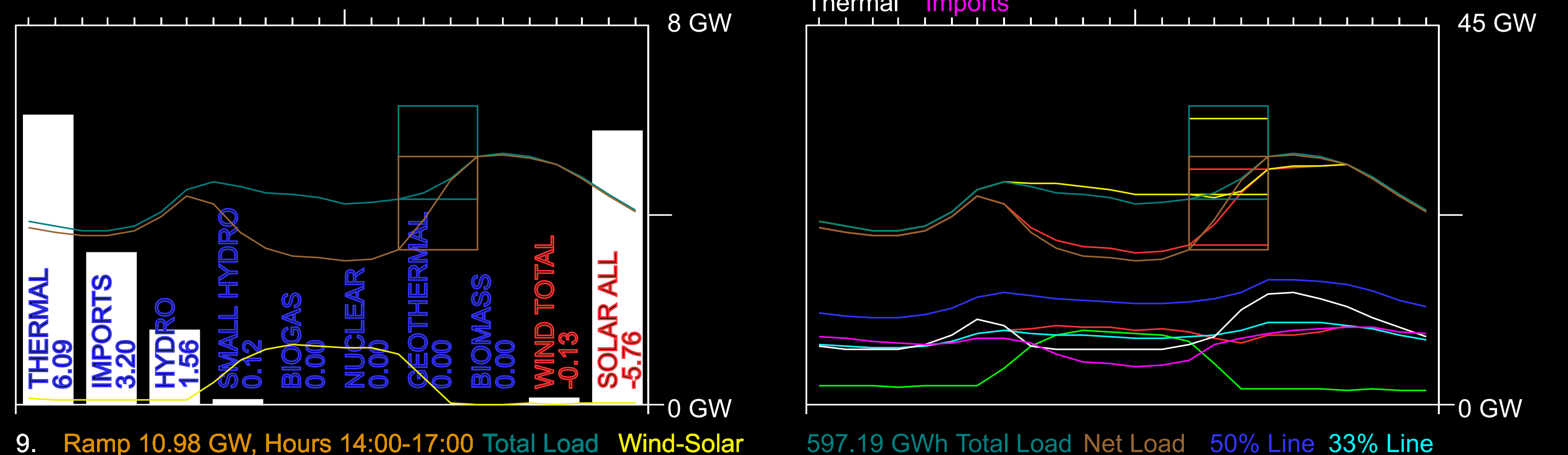
6. Ramp 11.11 GW, Hours 14:00-17:00 Total Load Wind-Solar
Sat - 12/17/2016 (data) Output Change Net Load Min: 15.20 GW
576.15 GWh Total Load Net Load 50% Line 33% Line
20.85% Renewable 120.13GWh Opportunity Line Result Line
Thermal Imports



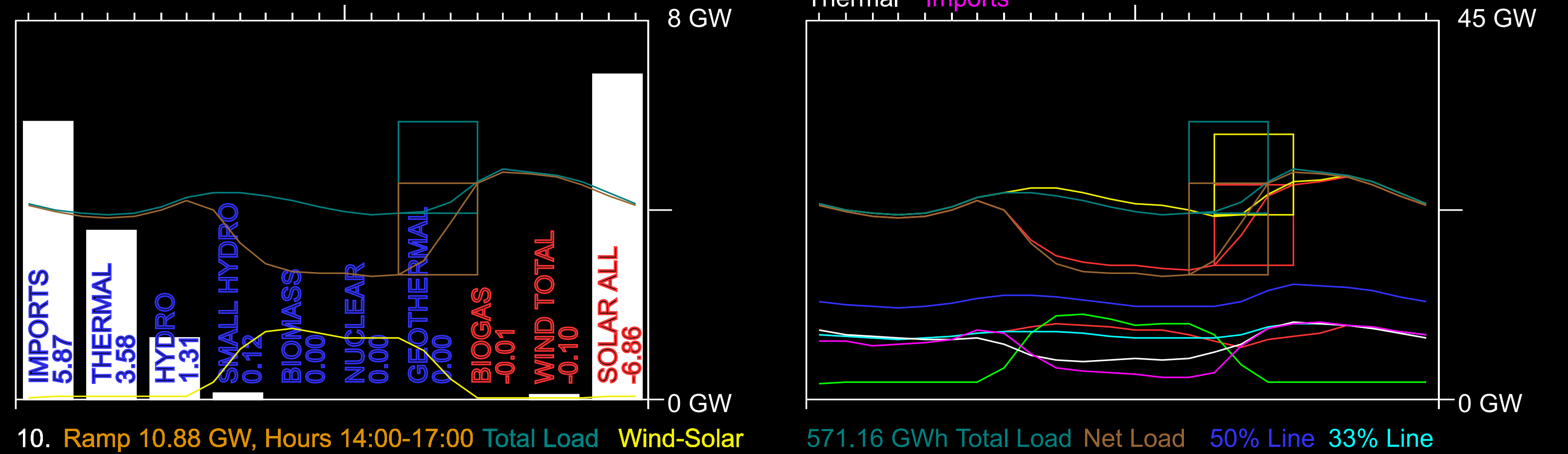
7. Ramp 11.10 GW, Hours 14:00-17:00 Total Load Wind-Solar
Wed - 01/25/2017 (data) Output Change Net Load Min: 18.16 GW
635.78 GWh Total Load Net Load 50% Line 33% Line
17.57% Renewable 111.68GWh Opportunity Line Result Line
Thermal Imports



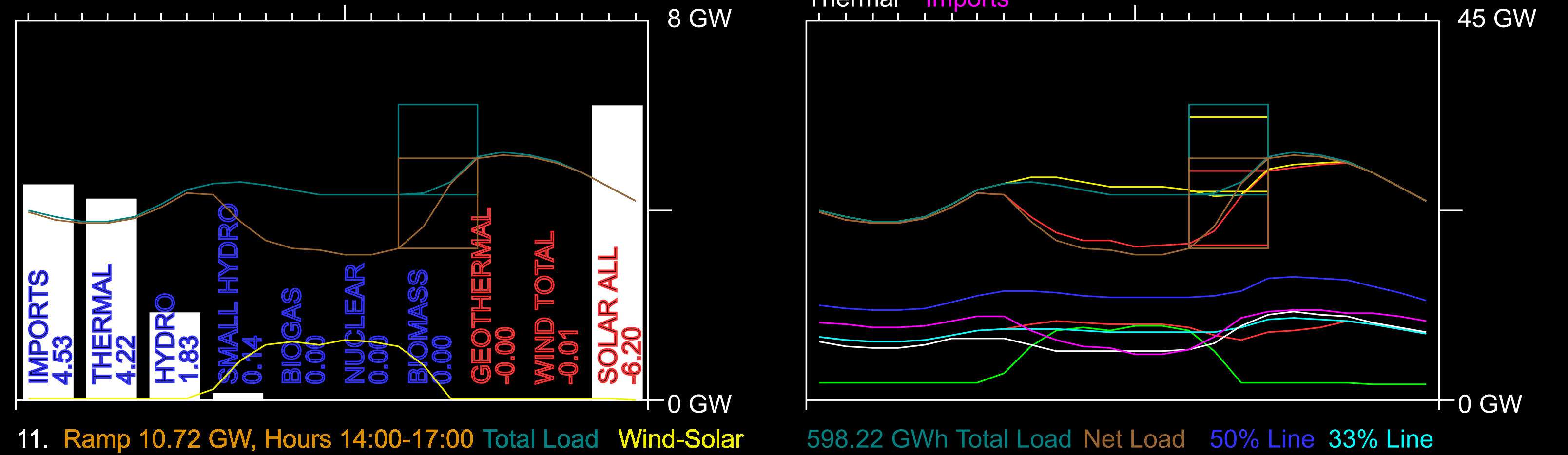
8. Ramp 11.01 GW, Hours 14:00-17:00 Total Load Wind-Solar
Fri - 12/02/2016 (data) Output Change Net Load Min: 16.05 GW
603.42 GWh Total Load Net Load 50% Line 33% Line
20.64% Renewable 124.57GWh Opportunity Line Result Line
Thermal Imports



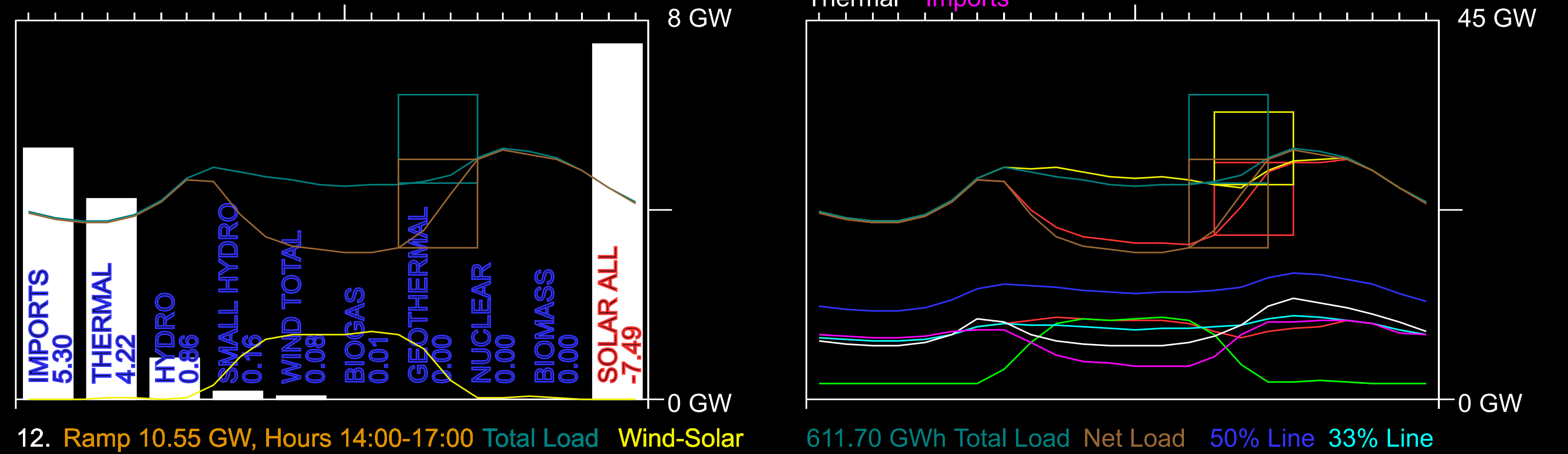
9. Ramp 10.98 GW, Hours 14:00-17:00 Total Load Wind-Solar
Tue - 11/29/2016 (data) Output Change Net Load Min: 17.07 GW
597.19 GWh Total Load Net Load 50% Line 33% Line
16.00% Renewable 95.56GWh Opportunity Line Result Line
Thermal Imports



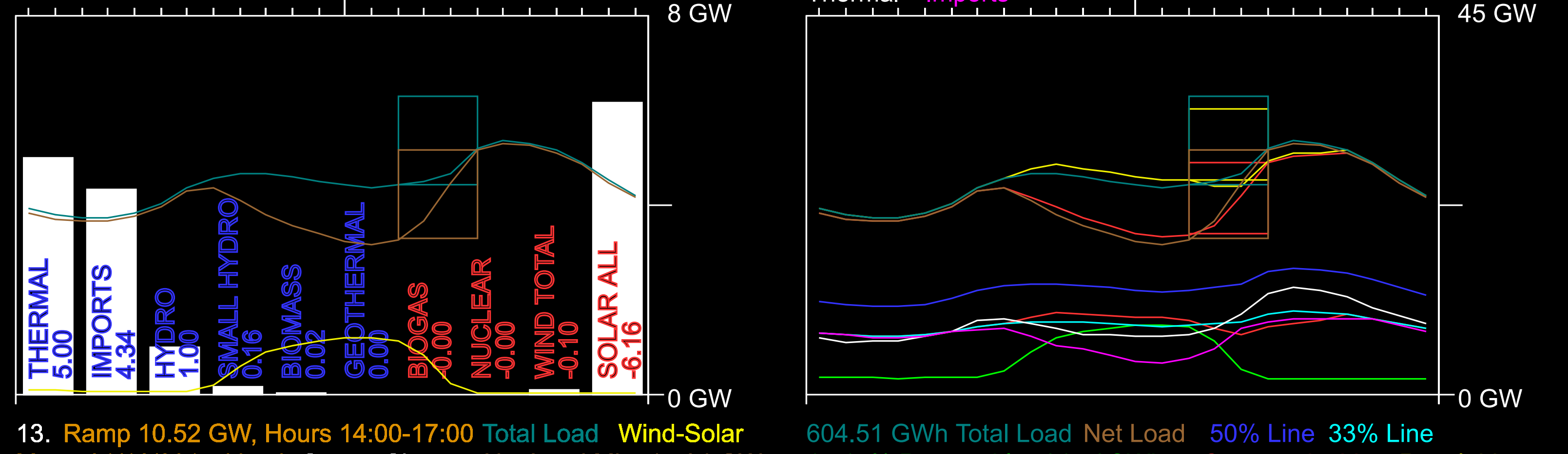
10. Ramp 10.88 GW, Hours 14:00-17:00 Total Load Wind-Solar
Sat - 01/28/2017 (data) Output Change Net Load Min: 14.60 GW
571.16 GWh Total Load Net Load 50% Line 33% Line
19.01% Renewable 108.55GWh Opportunity Line Result Line
Thermal Imports



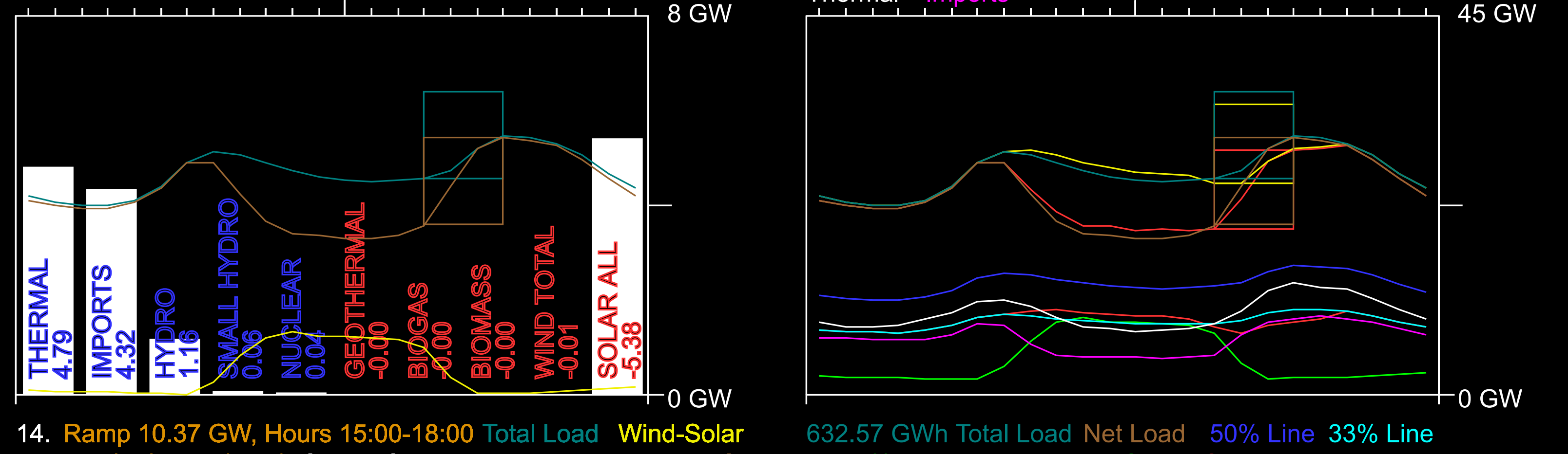
11. Ramp 10.72 GW, Hours 14:00-17:00 Total Load Wind-Solar
Tue - 12/27/2016 (data) Output Change Net Load Min: 17.23 GW
598.22 GWh Total Load Net Load 50% Line 33% Line
16.26% Renewable 97.29GWh Opportunity Line Result Line
Thermal Imports



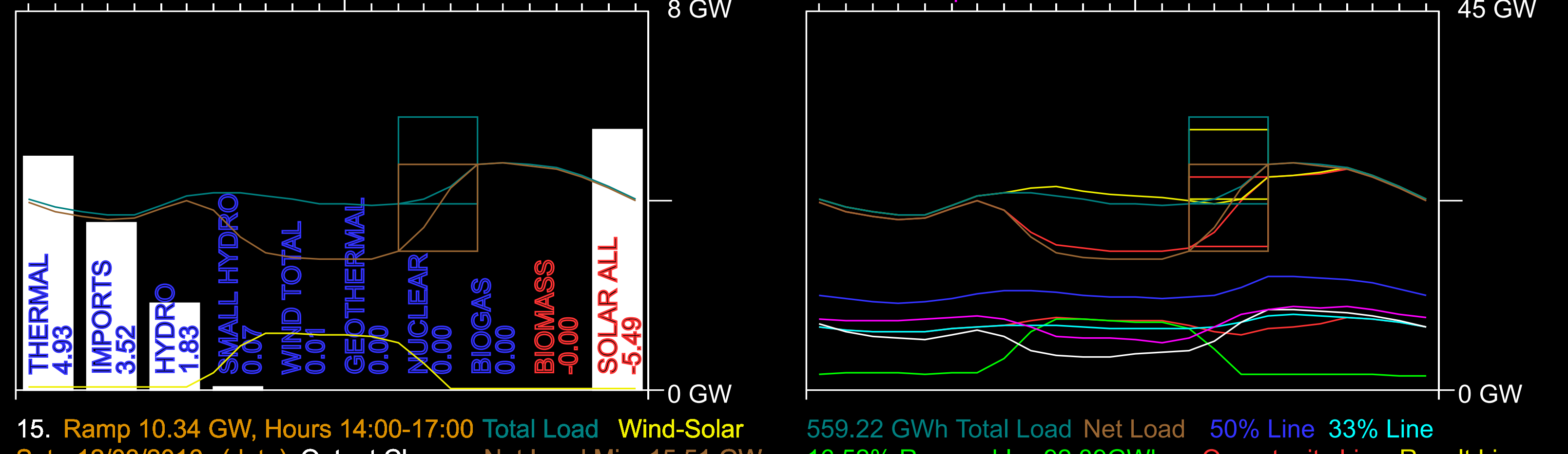
12. Ramp 10.55 GW, Hours 14:00-17:00 Total Load Wind-Solar
Tue - 01/31/2017 (data) Output Change Net Load Min: 17.49 GW
611.70 GWh Total Load Net Load 50% Line 33% Line
17.30% Renewable 105.83GWh Opportunity Line Result Line
Thermal Imports



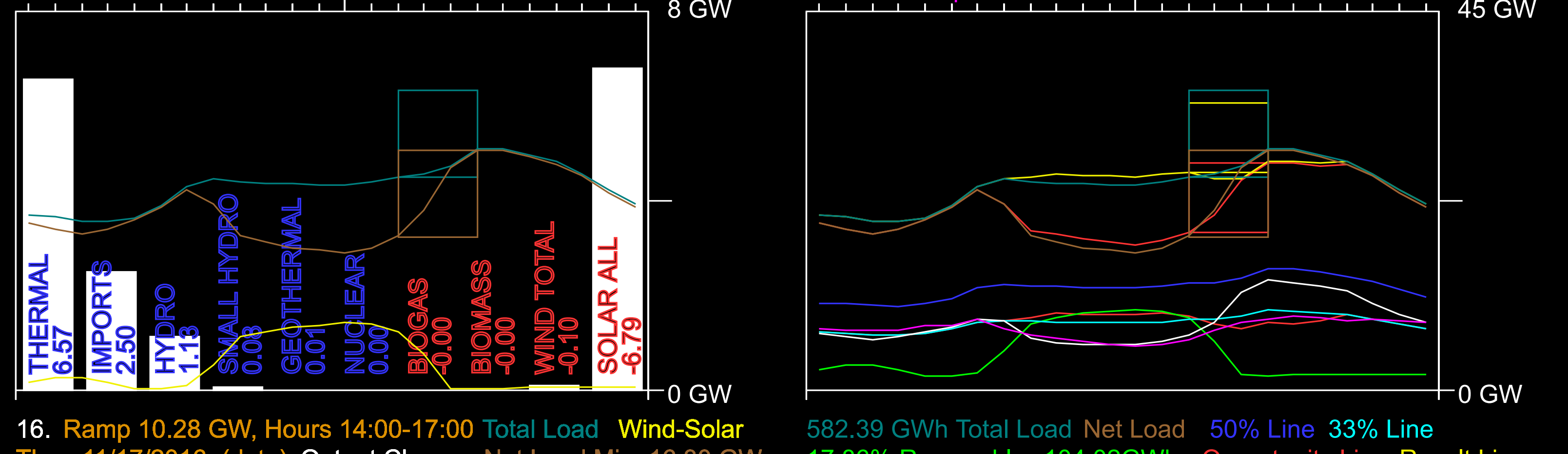
13. Ramp 10.52 GW, Hours 14:00-17:00 Total Load Wind-Solar
Mon - 01/16/2017 (data) Output Change Net Load Min: 17.84 GW
604.51 GWh Total Load Net Load 50% Line 33% Line
15.17% Renewable 91.70GWh Opportunity Line Result Line
Thermal Imports



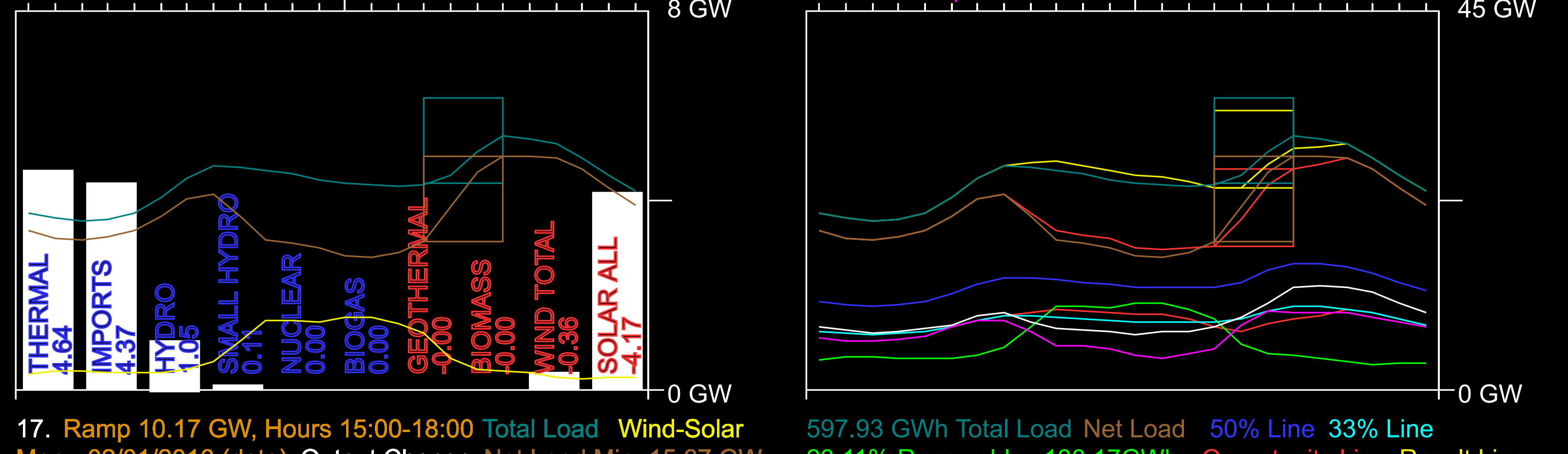
14. Ramp 10.37 GW, Hours 15:00-18:00 Total Load Wind-Solar
Thu - 01/26/2017 (data) Output Change Net Load Min: 18.53 GW
632.57 GWh Total Load Net Load 50% Line 33% Line
16.22% Renewable 102.60GWh Opportunity Line Result Line
Thermal Imports



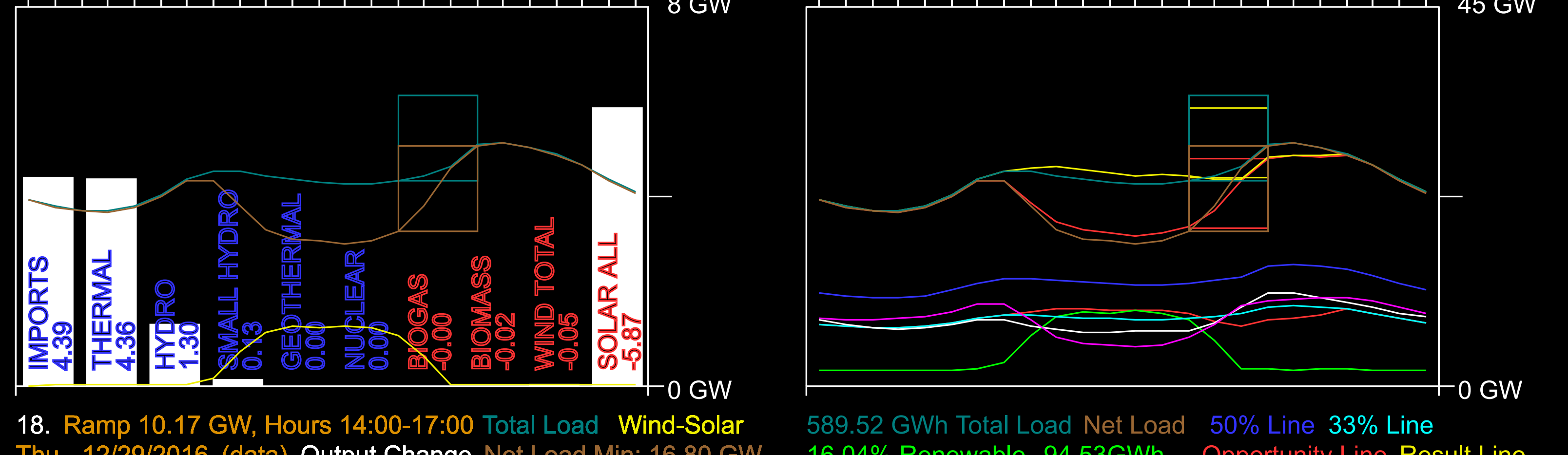
15. Ramp 10.34 GW, Hours 14:00-17:00 Total Load Wind-Solar
Sat - 12/03/2016 (data) Output Change Net Load Min: 15.51 GW
559.22 GWh Total Load Net Load 50% Line 33% Line
16.52% Renewable 92.39GWh Opportunity Line Result Line
Thermal Imports



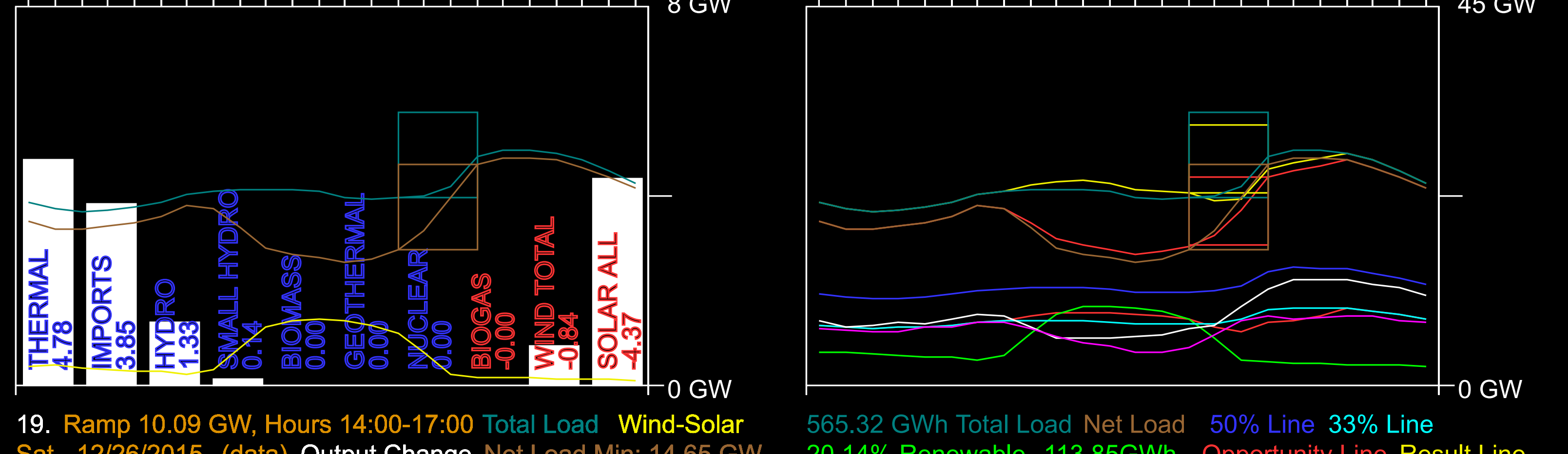
16. Ramp 10.28 GW, Hours 14:00-17:00 Total Load Wind-Solar
Thu - 11/17/2016 (data) Output Change Net Load Min: 16.30 GW
582.39 GWh Total Load Net Load 50% Line 33% Line
17.86% Renewable 104.02GWh Opportunity Line Result Line
Thermal Imports



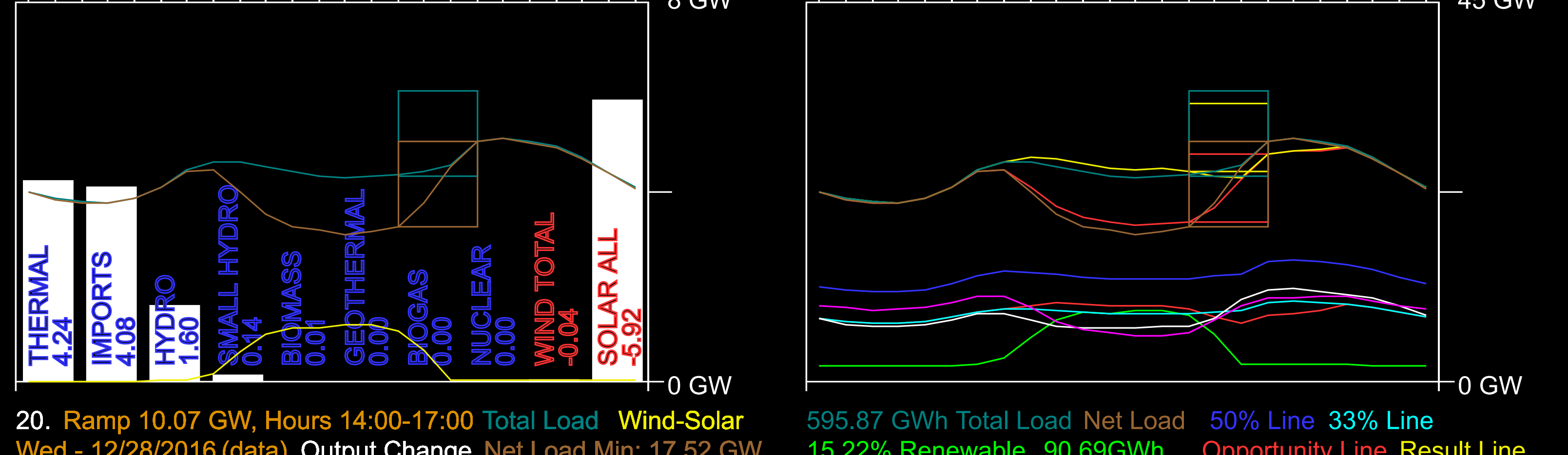
17. Ramp 10.17 GW, Hours 15:00-18:00 Total Load Wind-Solar
Mon - 02/01/2016 (data) Output Change Net Load Min: 15.67 GW
597.93 GWh Total Load Net Load 50% Line 33% Line
23.11% Renewable 138.17GWh Opportunity Line Result Line
Thermal Imports



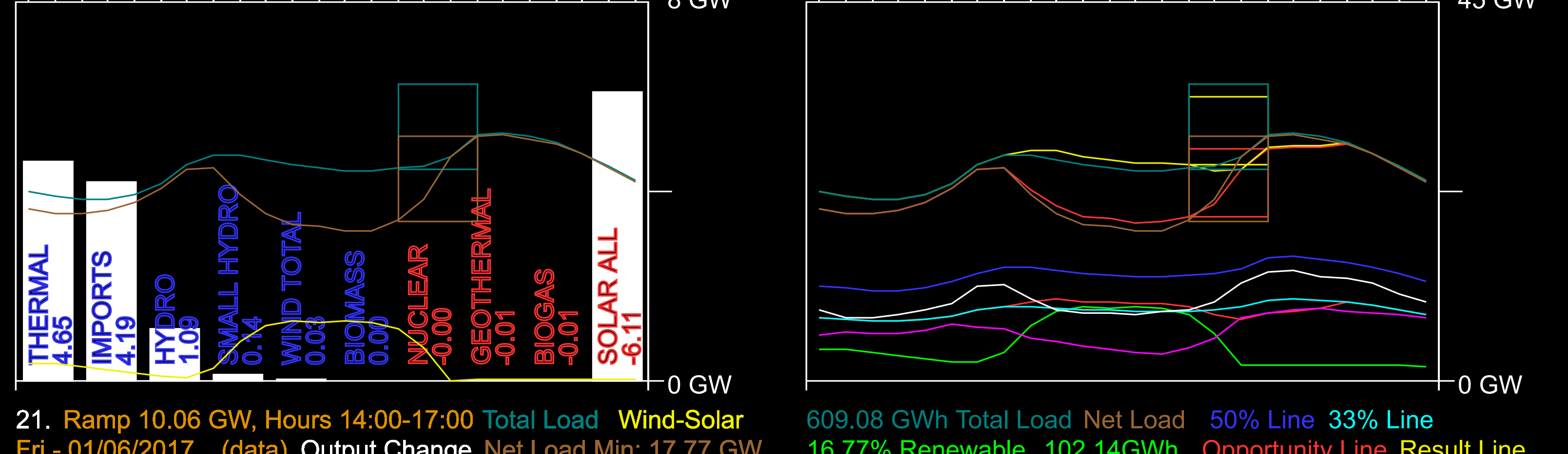
18. Ramp 10.17 GW, Hours 14:00-17:00 Total Load Wind-Solar
Thu - 12/29/2016 (data) Output Change Net Load Min: 16.80 GW
589.52 GWh Total Load Net Load 50% Line 33% Line
16.04% Renewable 94.53GWh Opportunity Line Result Line
Thermal Imports



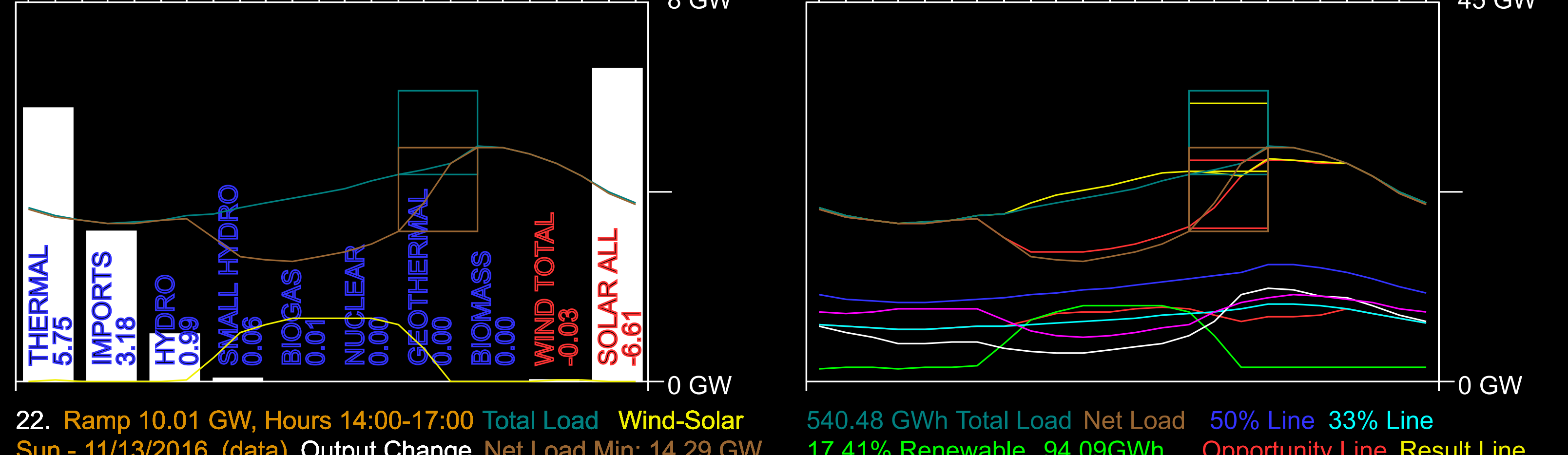
19. Ramp 10.09 GW, Hours 14:00-17:00 Total Load Wind-Solar
Sat - 12/26/2015 (data) Output Change Net Load Min: 14.65 GW
565.32 GWh Total Load Net Load 50% Line 33% Line
20.14% Renewable 113.85GWh Opportunity Line Result Line
Thermal Imports



20. Ramp 10.07 GW, Hours 14:00-17:00 Total Load Wind-Solar
Wed - 12/28/2016 (data) Output Change Net Load Min: 17.52 GW
595.87 GWh Total Load Net Load 50% Line 33% Line
15.22% Renewable 90.69GWh Opportunity Line Result Line
Thermal Imports



21. Ramp 10.06 GW, Hours 14:00-17:00 Total Load Wind-Solar
Fri - 01/06/2017 (data) Output Change Net Load Min: 17.77 GW
609.08 GWh Total Load Net Load 50% Line 33% Line
16.77% Renewable 102.14GWh Opportunity Line Result Line
Thermal Imports



22. Ramp 10.01 GW, Hours 14:00-17:00 Total Load Wind-Solar
Sun - 11/13/2016 (data) Output Change Net Load Min: 14.29 GW
540.48 GWh Total Load Net Load 50% Line 33% Line
17.41% Renewable 94.09GWh Opportunity Line Result Line
Thermal Imports

Maximum 3 Hour Net Load Ramp is in Brown rectangle scaled to 45.00 GW
Net Load is Total Production less Wind and Solar as defined in California Energy Commission's resource_flexibility.pdf Figure 1.