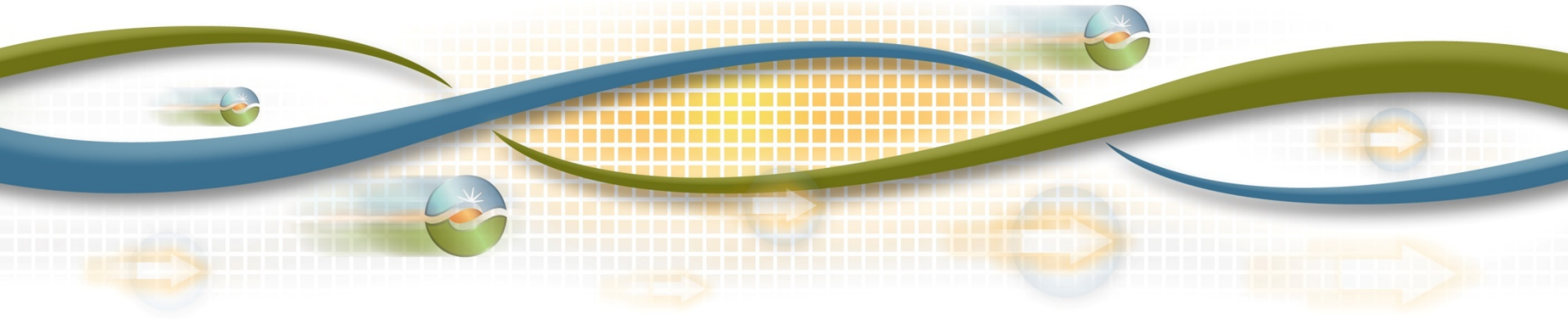


# CAISO's TOU period analysis to address "High Renewable" grid needs

March 12, 2015



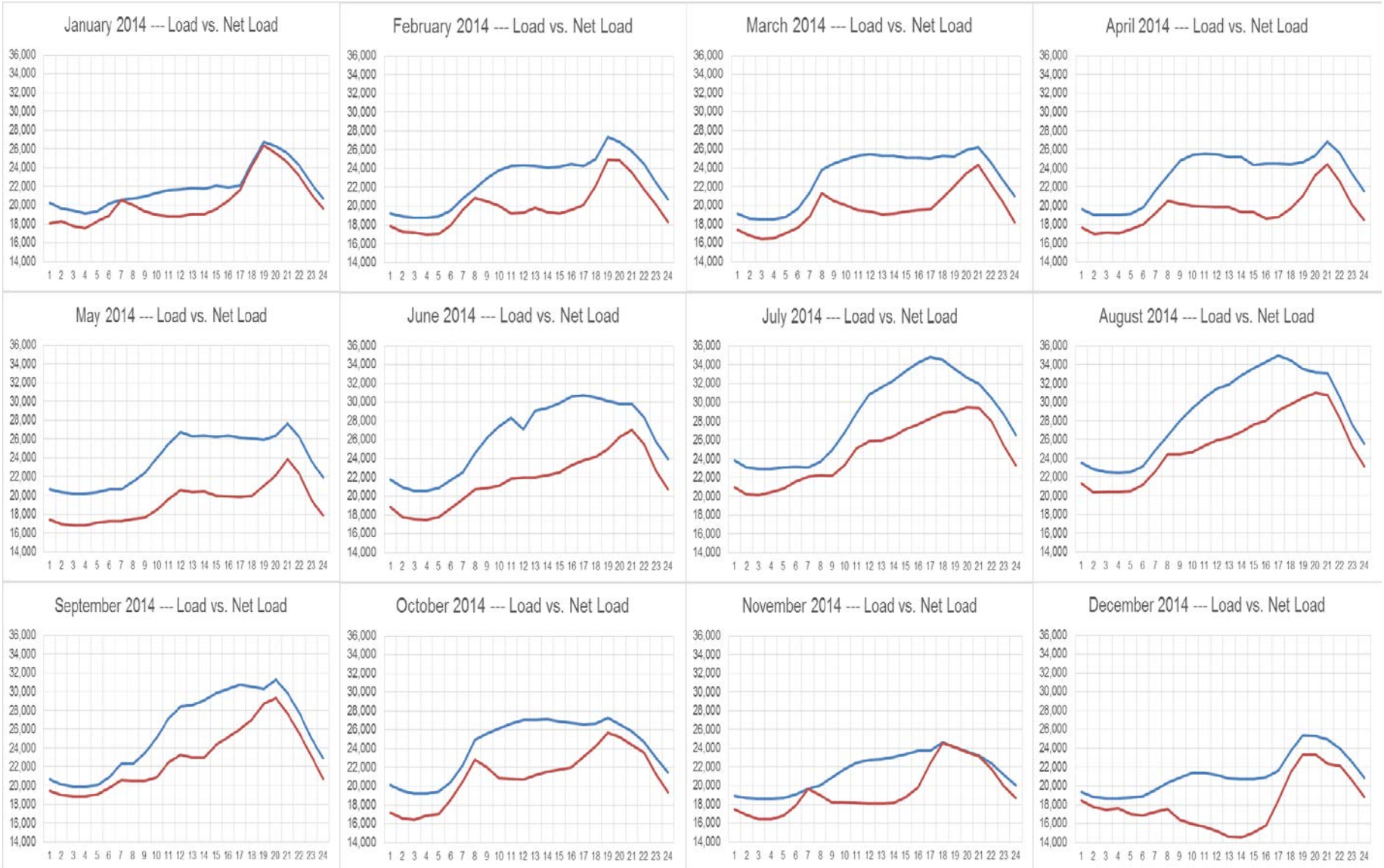
# TOU period analysis scope parameters

- Weekdays can be different than weekends
- Time blocks can differ by up to 4 seasons
- Maximum of 3 to 4 time blocks per day
- Needs will be based on system needs and not geography

# Questions for TOU period analysis

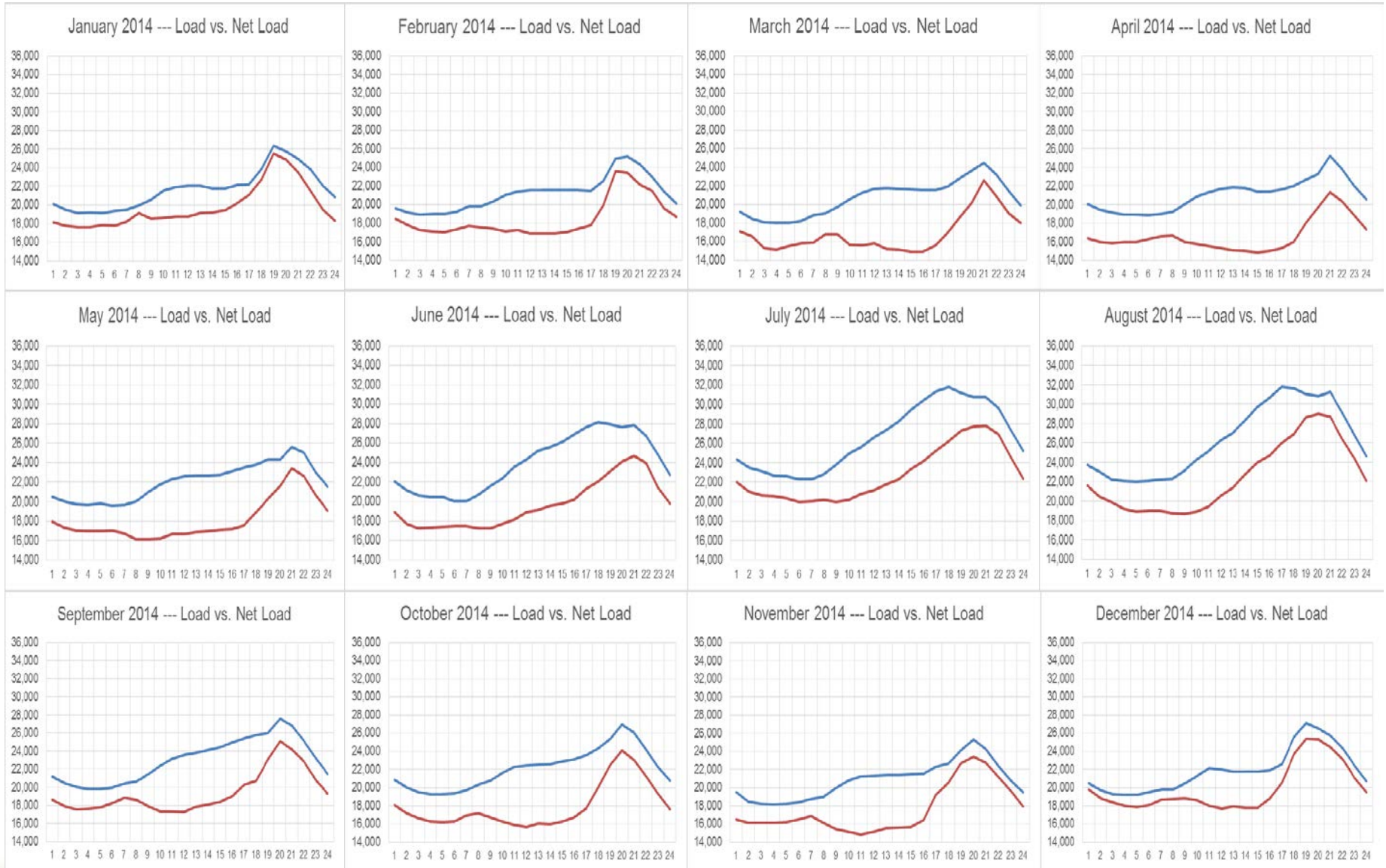
- Does the time of the CAISO's coincident demand vary by season?
- Does the time of the CAISO's coincident peak coincide with the PTOs' peak demand?
- Is there a noticeable difference between weekdays and weekends/holidays?
- Is there a need for IOU specific TOU periods?
- Can all three IOUs establish common TOU periods based on the CAISO's needs?
- Should TOU periods be grouped by months?

# Actual 2014 Monthly WeekDAY Load vs. Net Load profiles

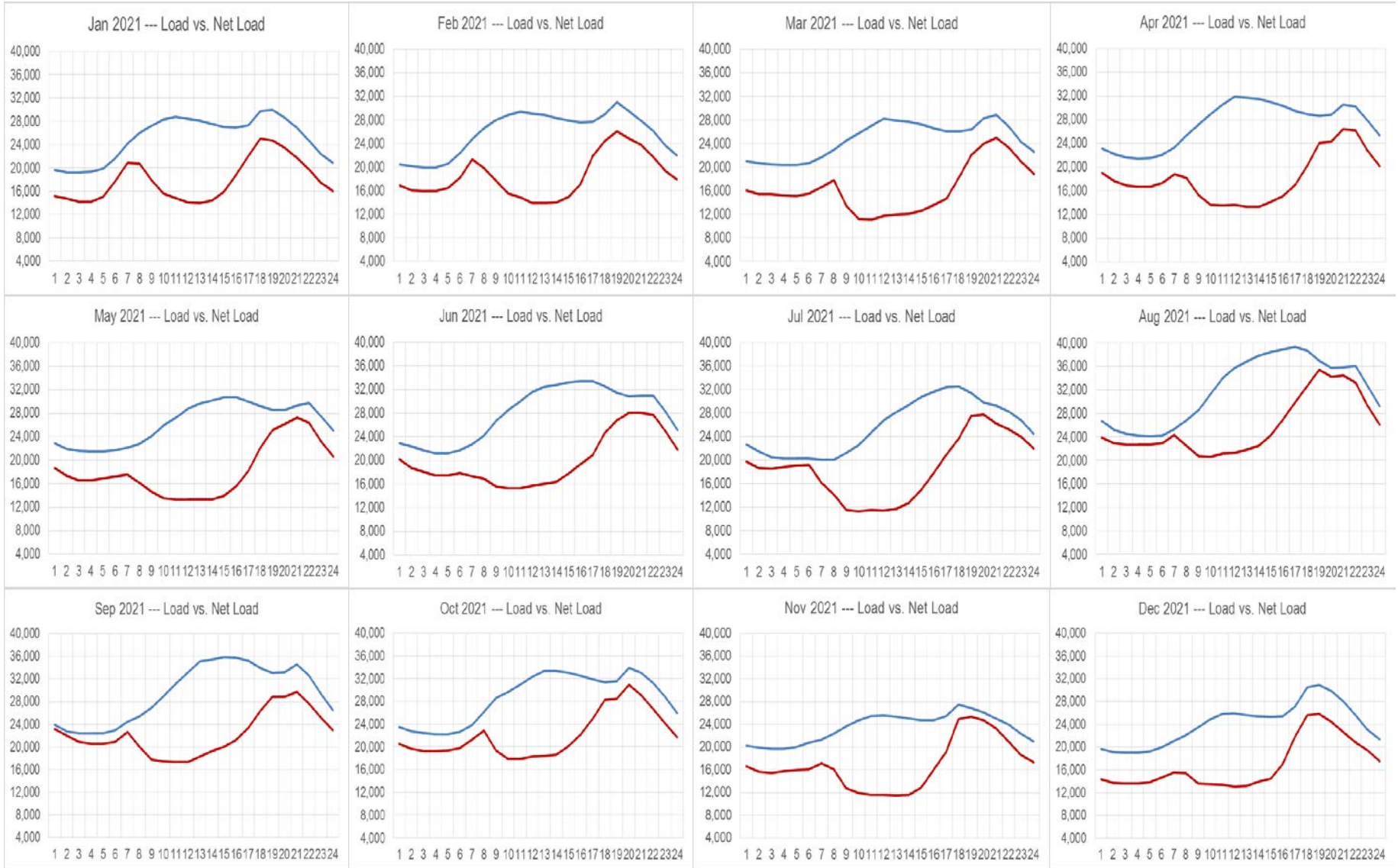




# Actual 2014 Monthly WeekEND Load vs. Net Load profiles

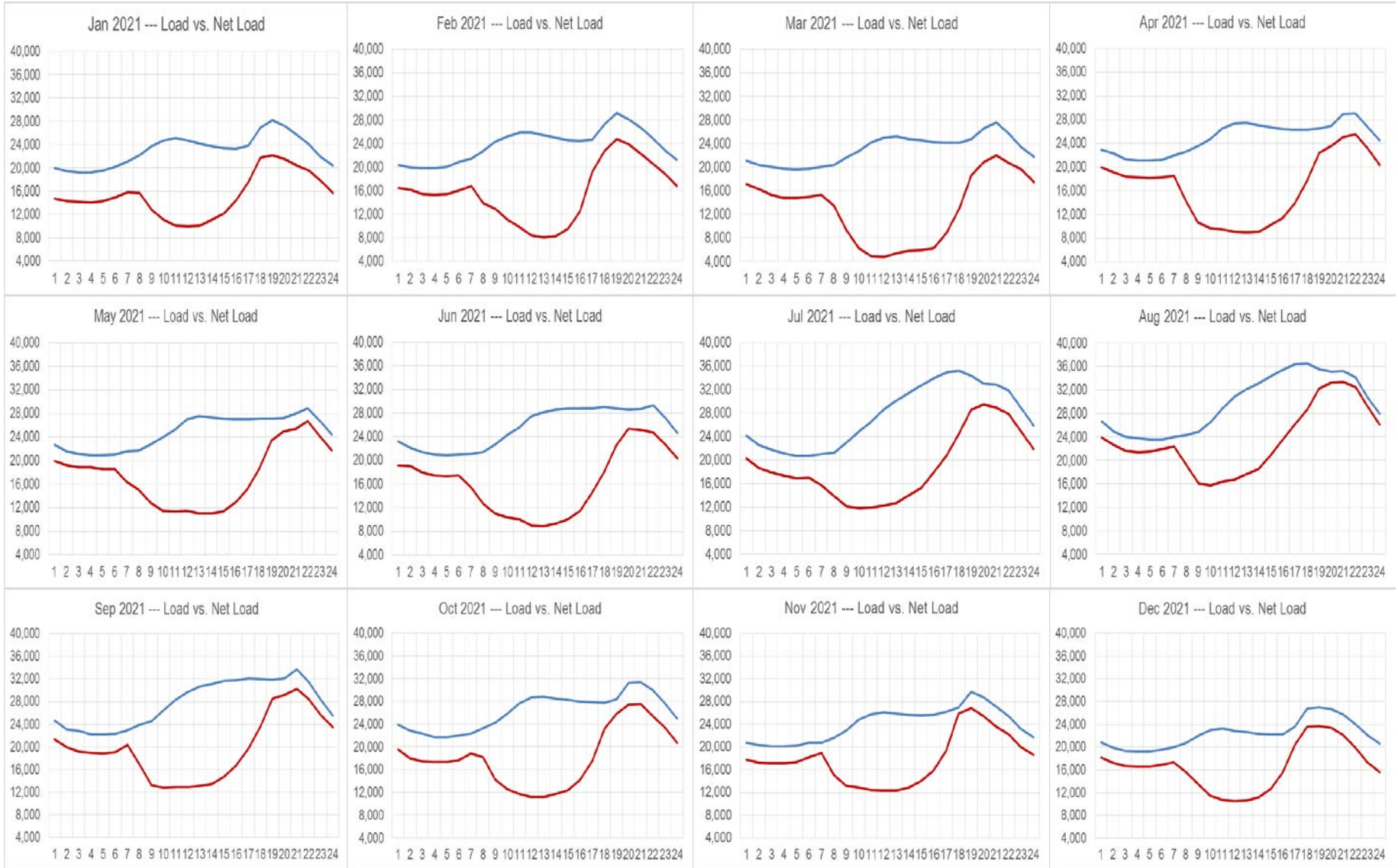


# Forecast 2021 Monthly WeekDAY Load vs. Net Load profiles

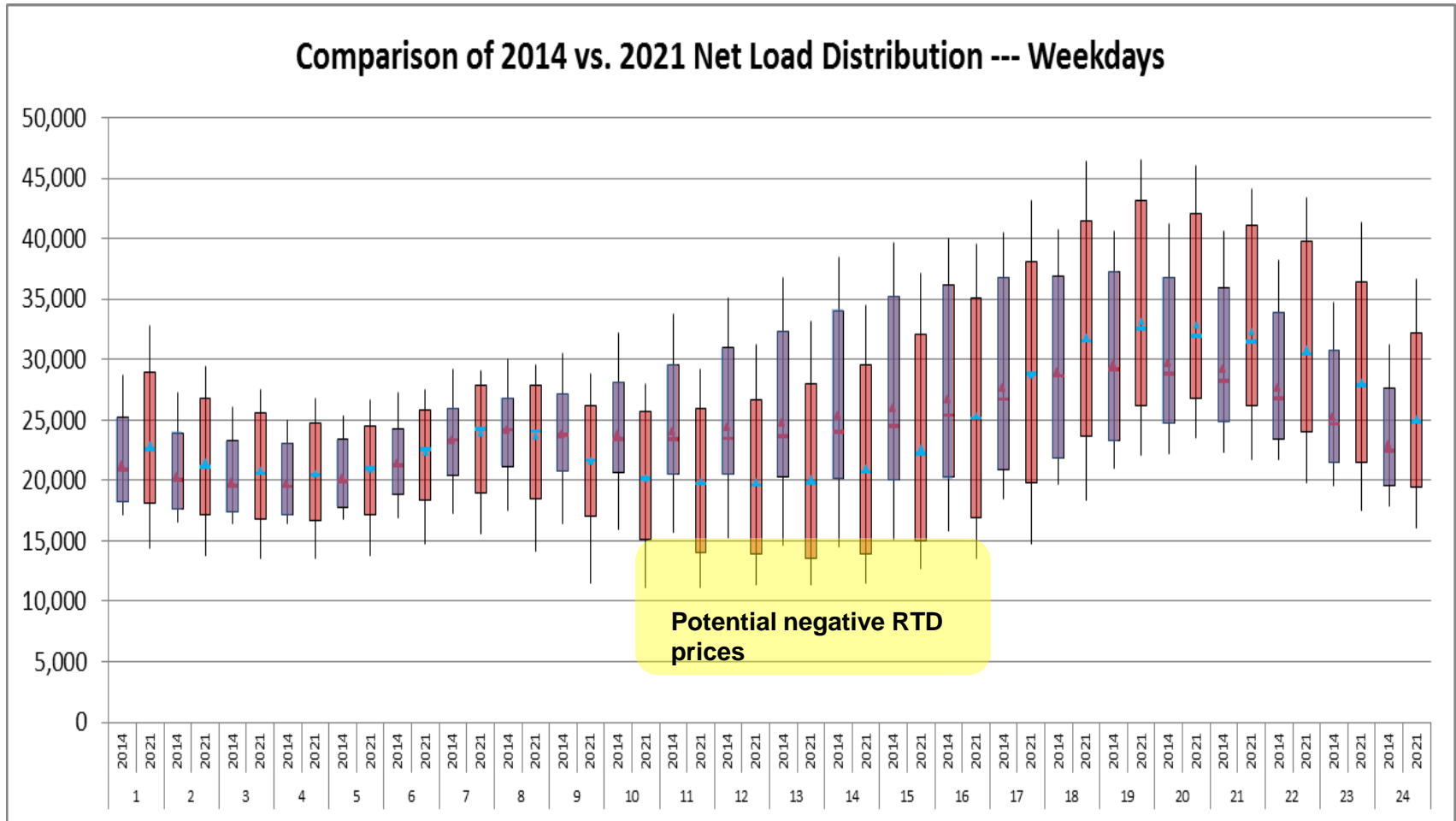




# Forecast 2021 Monthly WeekEND Load vs. Net Load

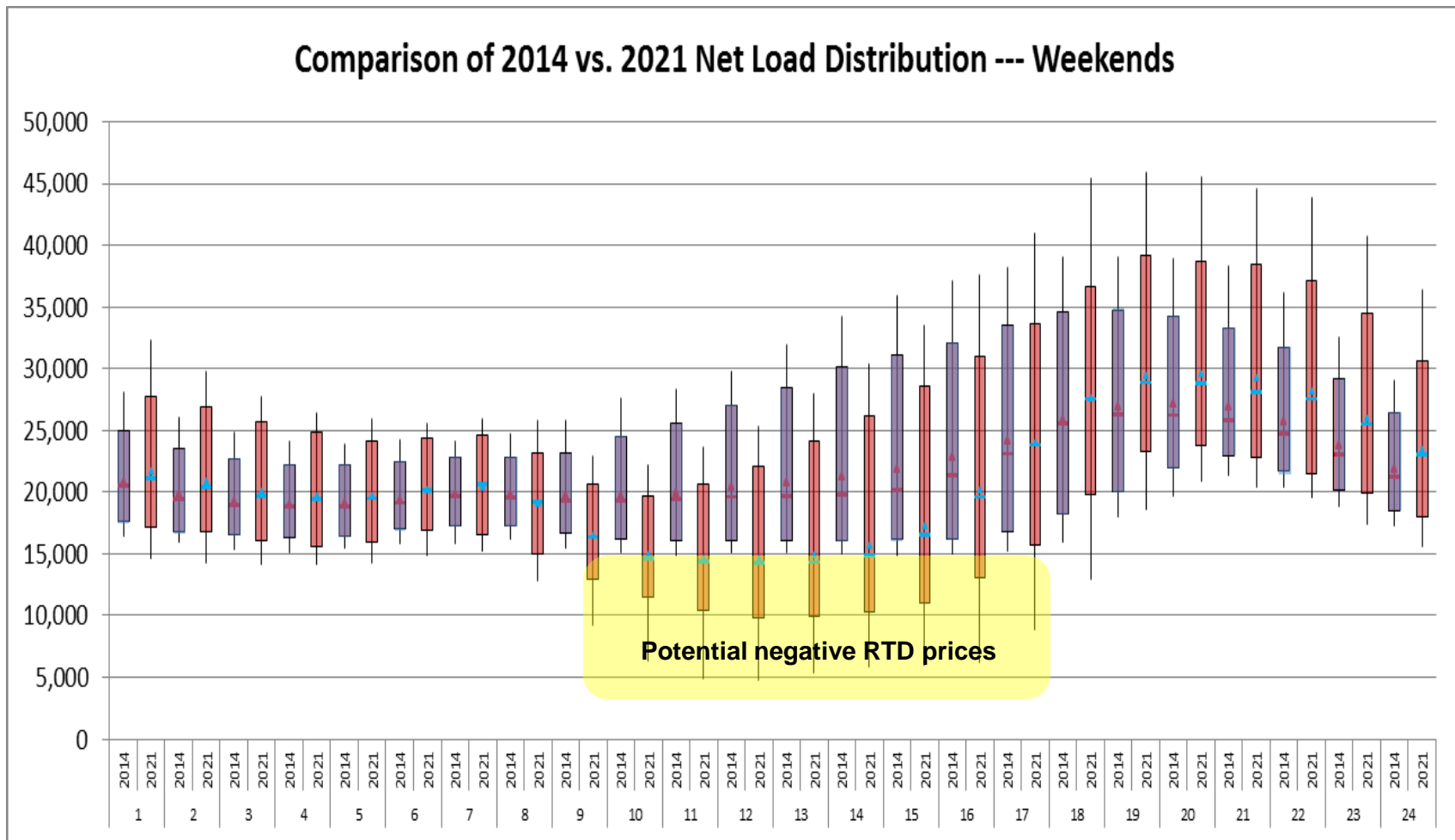


# Net load distribution 2014 vs. 2021 WeekDAY comparison

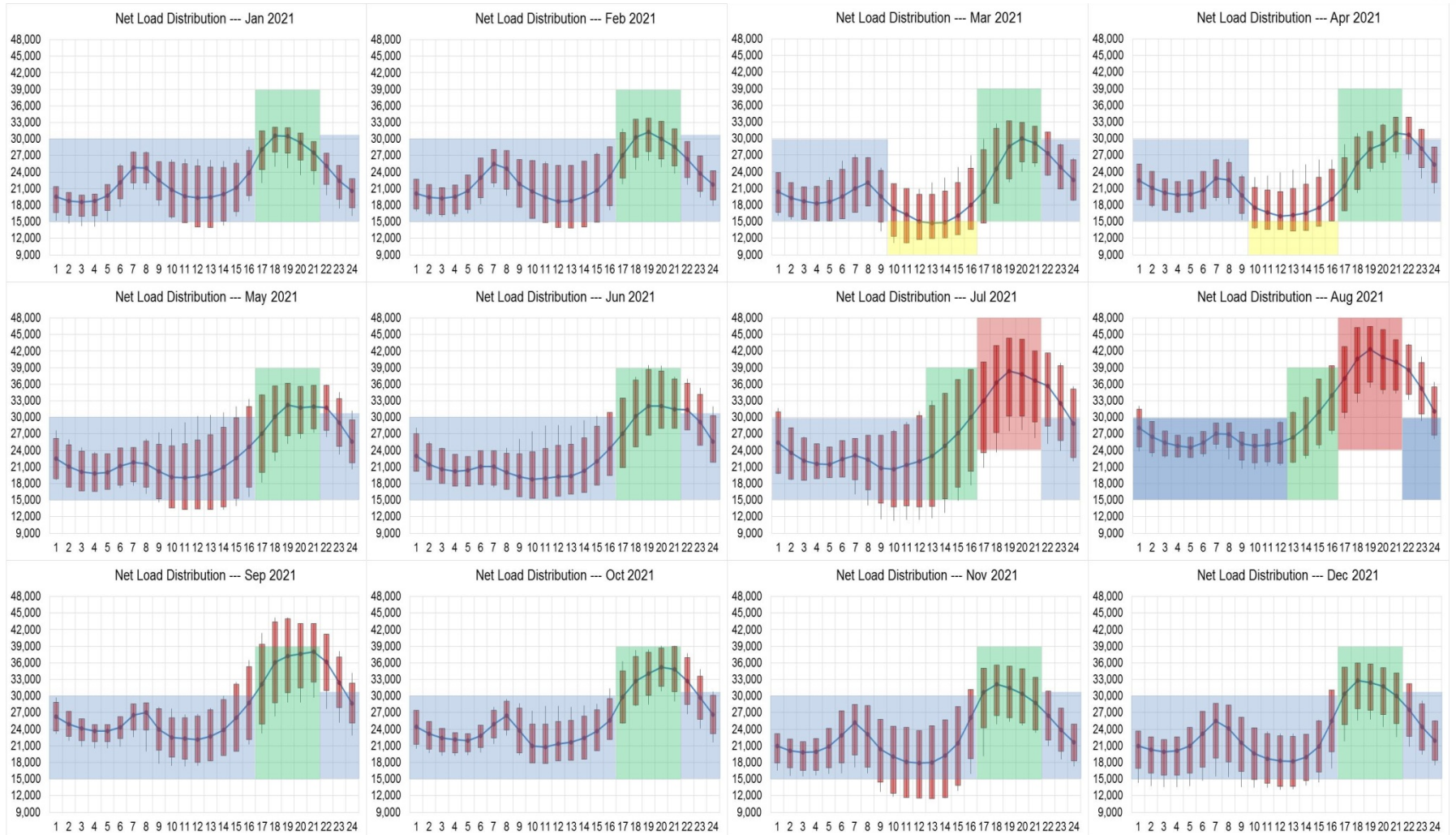




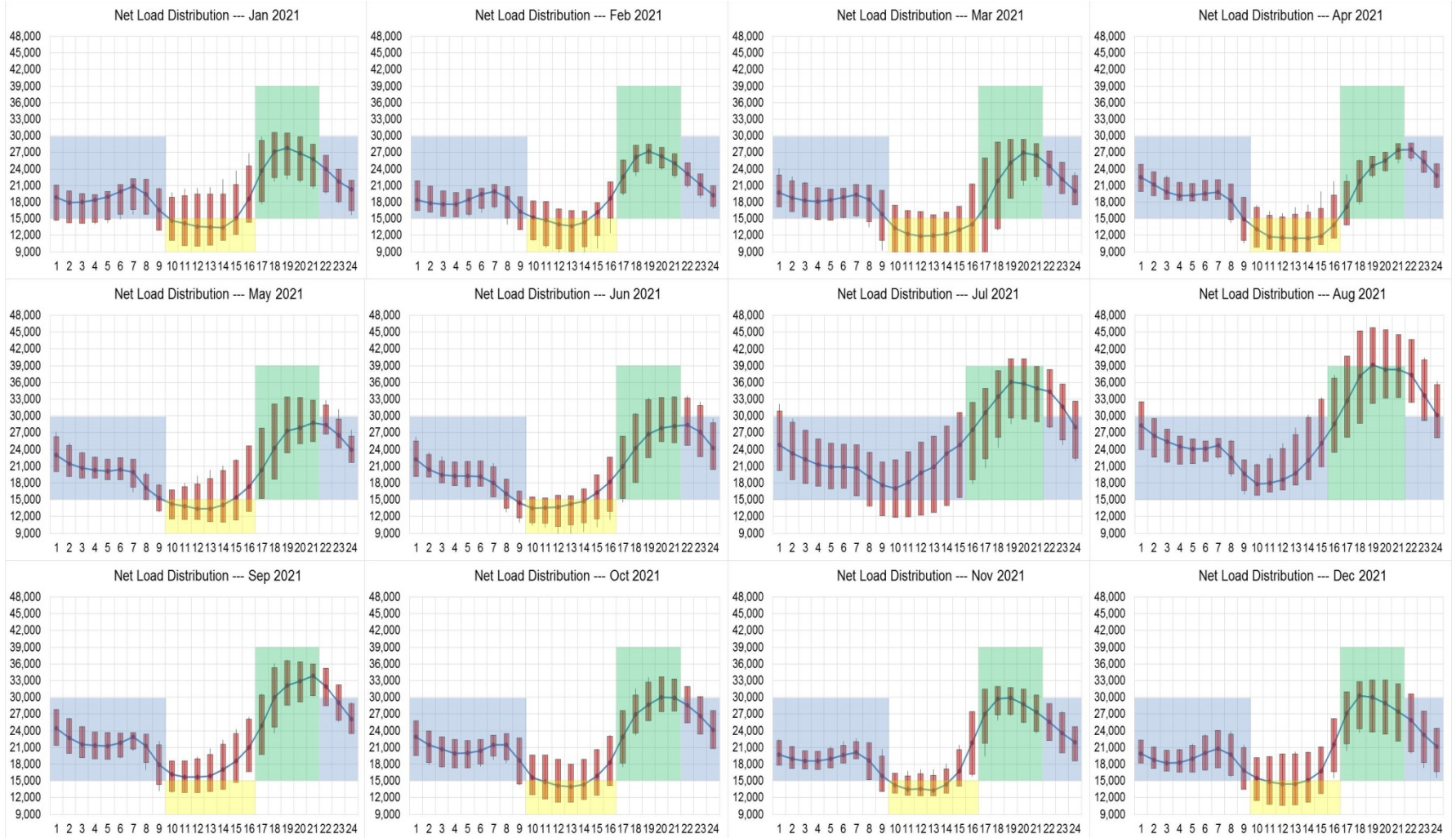
# Net load distribution 2014 vs. 2021 WeekEND comparison



# Forecast 2021 WeekDAY Monthly Net Load Distribution



# Forecast 2021 WeekEND Monthly Net Load Distribution



# Identified TOU time periods that align with expected grid conditions

## WEEKDAYS



## WEEKENDS





# Summary

- The CAISO's coincident peak demand varies by season.
- The CAISO's peak demand generally coincides with the three PTOs during spring, fall and winter and is 1-hour ahead of PG&E during the summer.
- Over-generation and real-time negative energy prices are expected to increase as more variable renewable resources are integrated into the system.
- The CAISO's summer coincident net load peak shifts from 4:00 - 5:00 pm to 6:00 - 7:00 pm.