

# EDF TRADING North America: Impact of Carbon on the Power Markets

PANC Annual Seminar – May 21, 2013



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# EDF Organization Overview



## Electricité de France S.A.

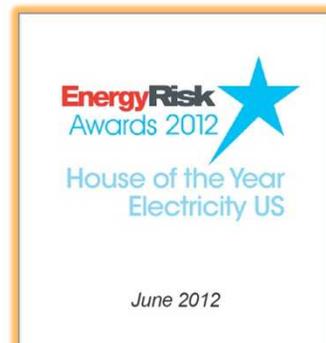
- Europe's largest electricity producer with 37.9 million customers
- 642 TWh of electricity production worldwide
- Headquartered in Paris with approximately 160,000 employees globally
- €72.7 billion in sales and €16.1 billion in EBITDA in 2012

## EDF Trading Limited

- Trades Electricity, Environmental Products, Freight, Natural Gas, Oil, Coal
- Headquartered in London with approximately 1,050 employees worldwide
- Shareholders equity of over €2.3 billion in 2012
- Wholly Owned by EDF SA; Moody's A3 Credit Rating

## EDF Trading North America, LLC

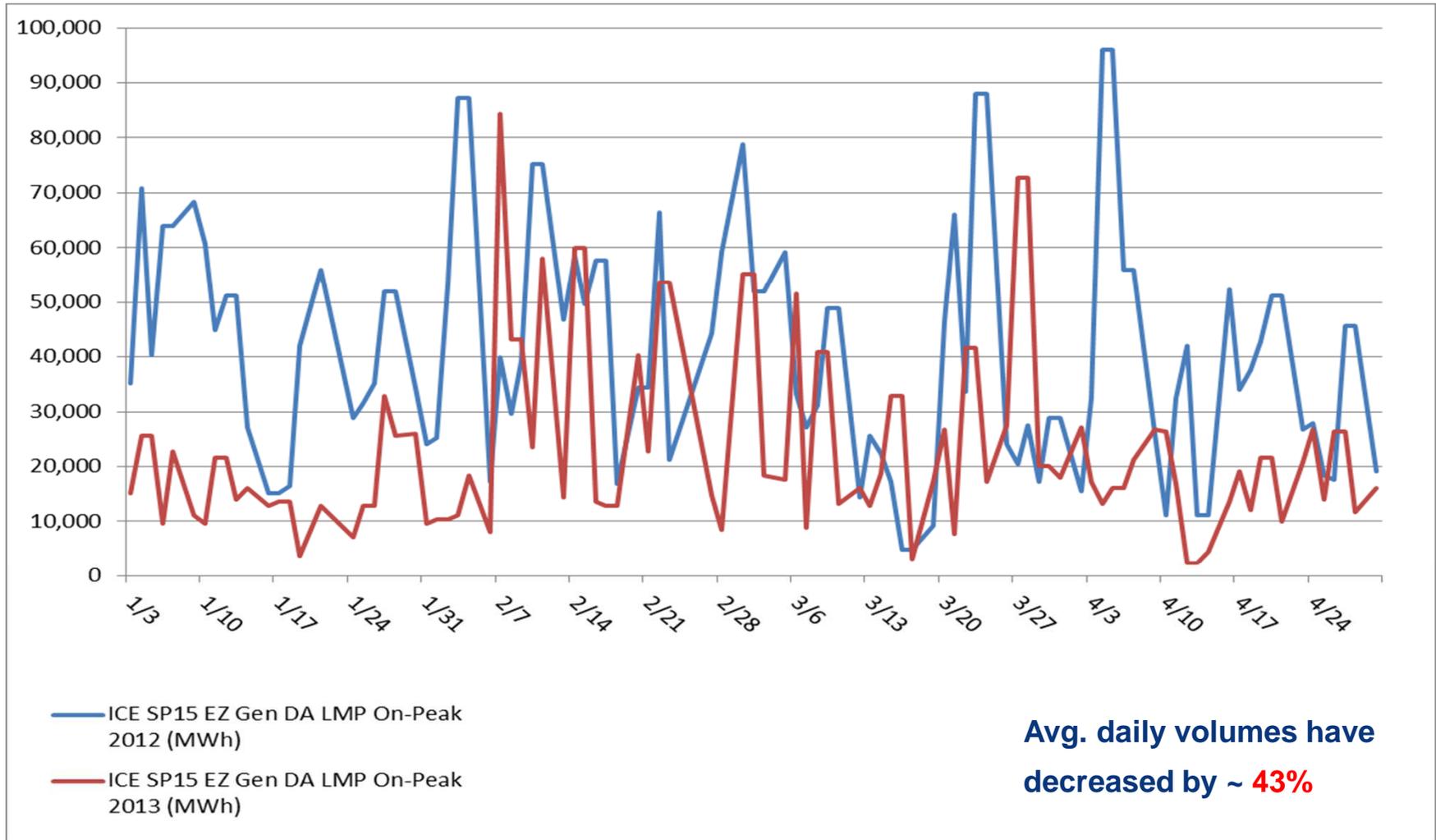
- Specializing in Natural Gas, Power, Coal and Environmental Products
- Provides marketing, trading, risk management, and optimization for clients
- Headquartered in Houston with 285 employees; field offices in Chicago, San Francisco, Moses Lake, Michigan, Maryland, Richmond, Atlanta, and Calgary



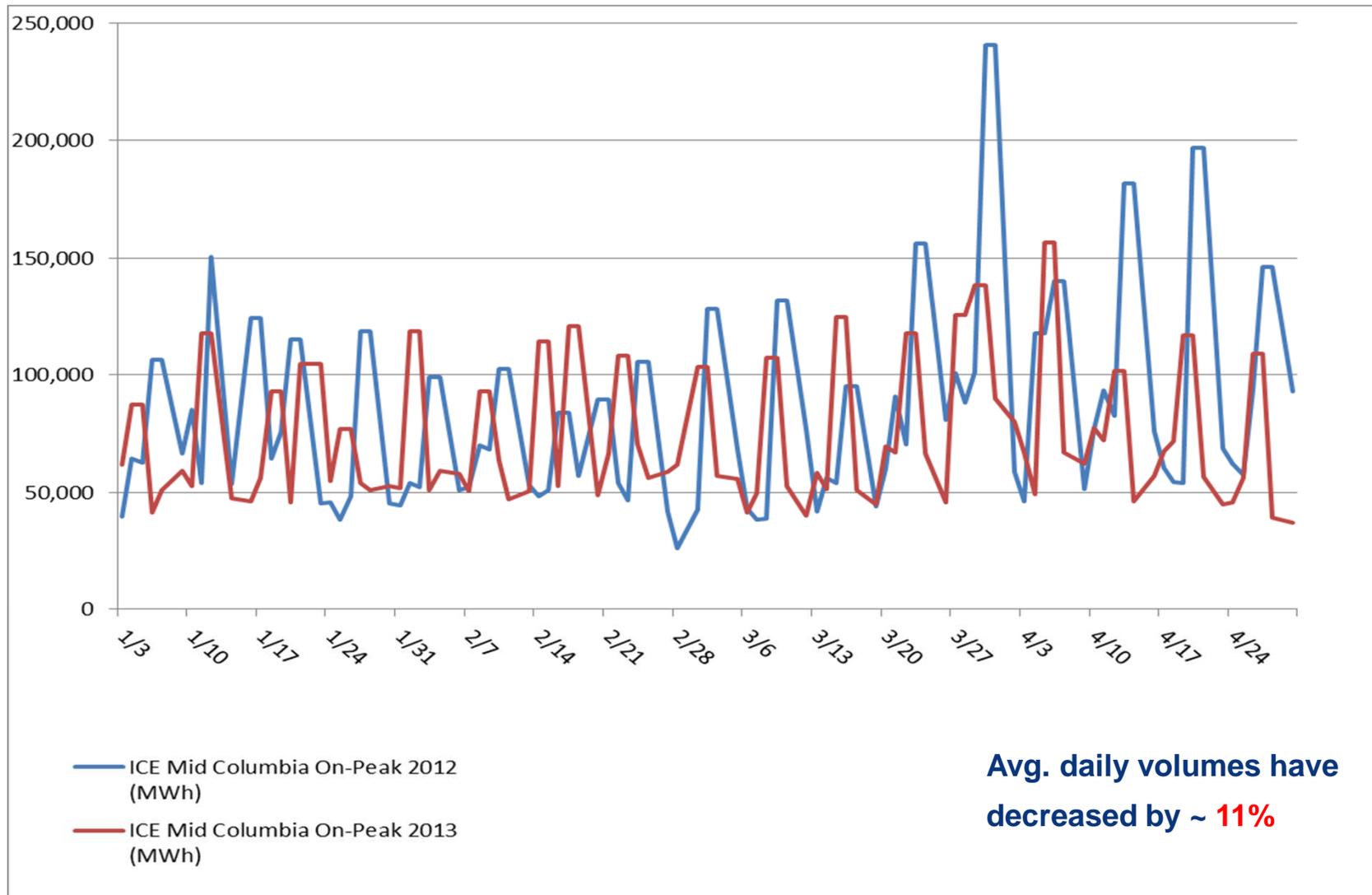
## Trading volumes down in California, but muted elsewhere

- Isolating impacts on the power markets for the impact of carbon is somewhat difficult due to other macro events such as:
  - Dodd Frank
  - SONGS outage
  - Counterparties exiting the Western power markets
  - General regulatory uncertainty
- Power trading liquidity has dropped across California, however surrounding trading hubs have not seen a corresponding decrease

# ICE SP15 On-Peak traded volumes comparison

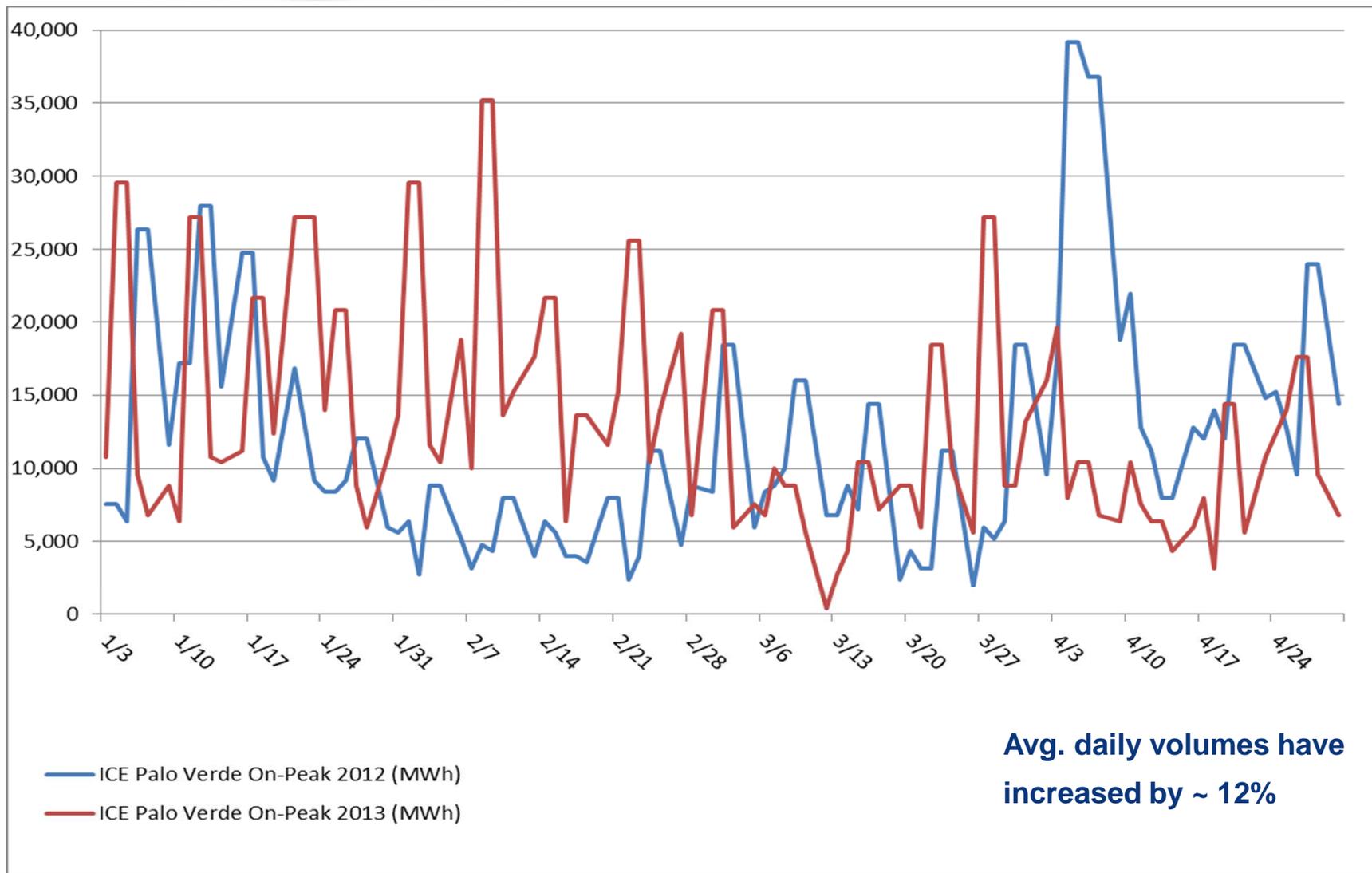


# ICE Mid-C On-Peak traded volumes comparison



Source: ICE

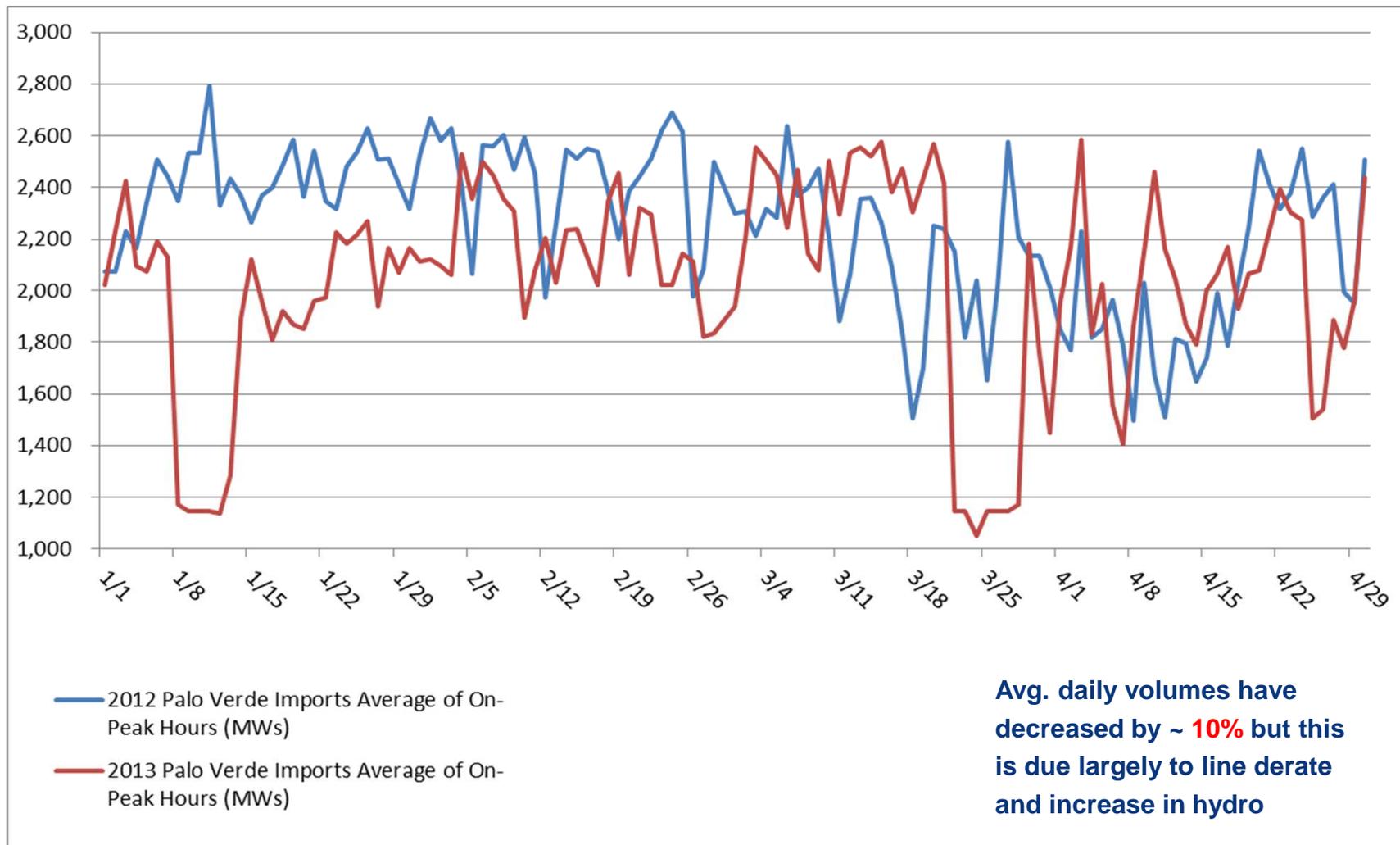
# ICE Palo Verde On-Peak traded volumes comparison



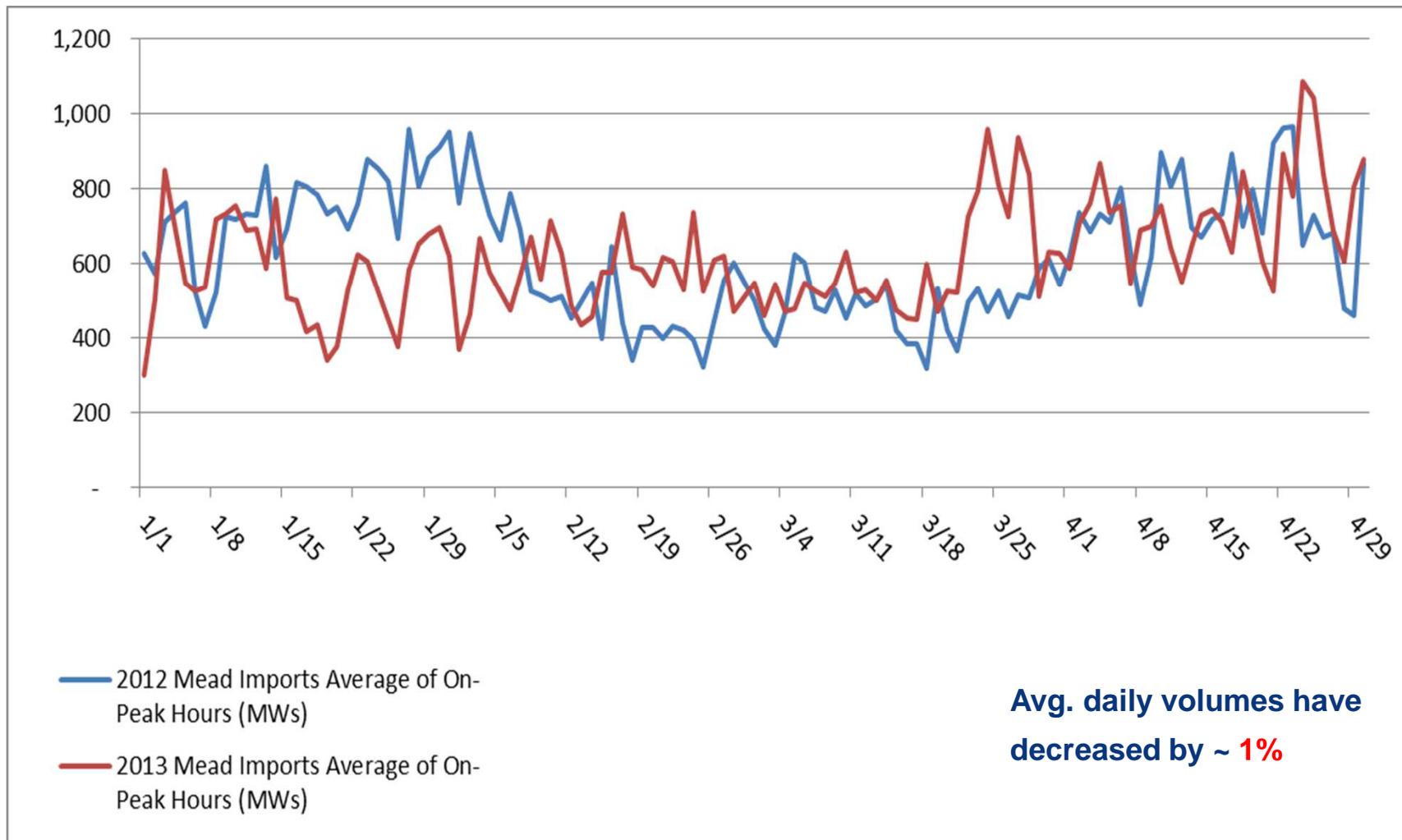
Source: ICE

**Carbon does not appear to  
have impacted total imports  
into California**

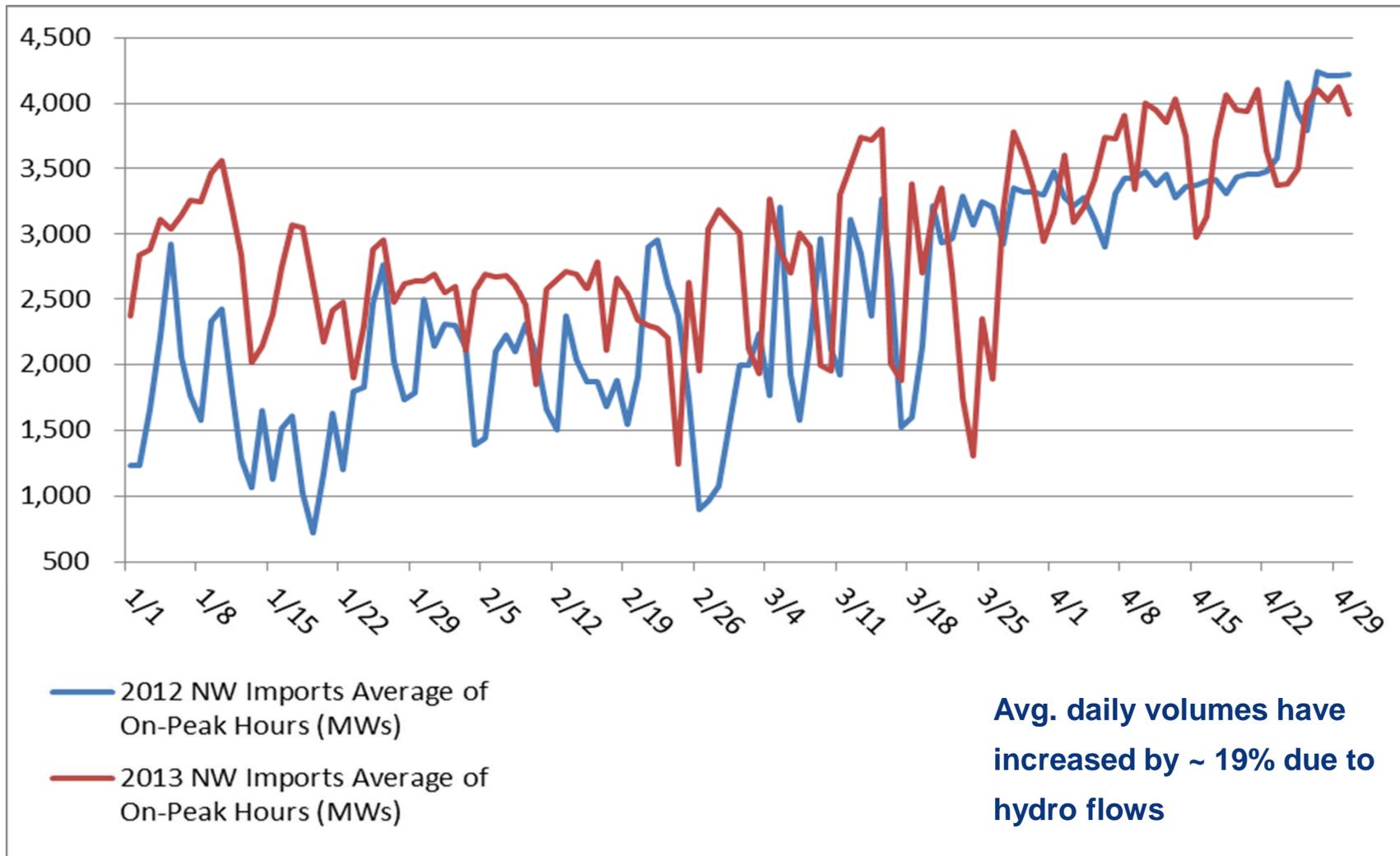
# Import Volumes at Palo Verde CAISO tie-point



# Import Volumes at Mead CAISO tie-point

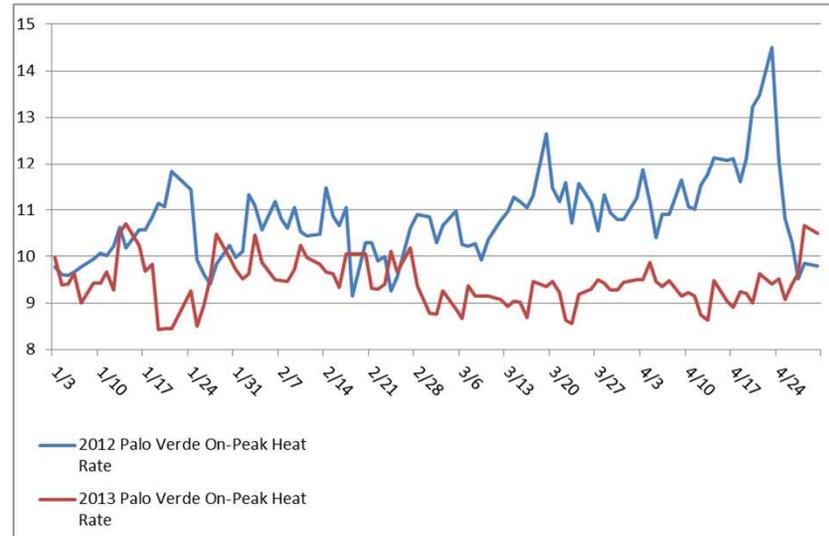
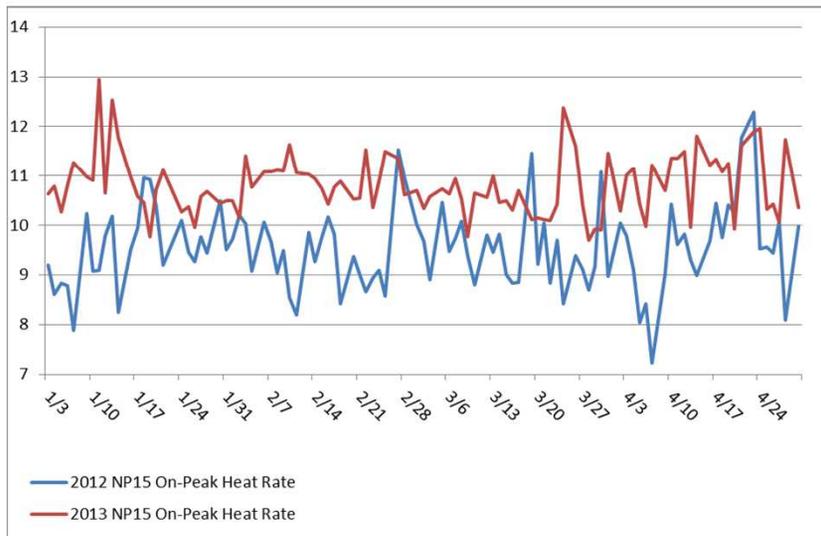
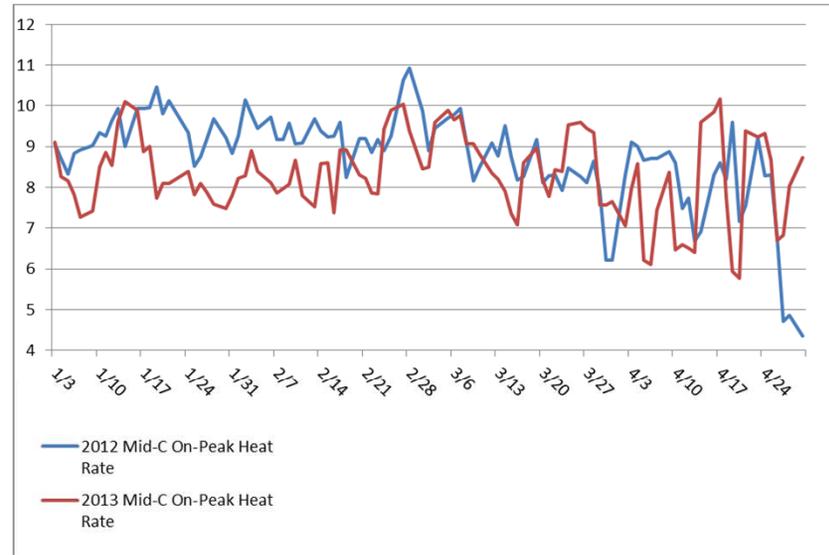
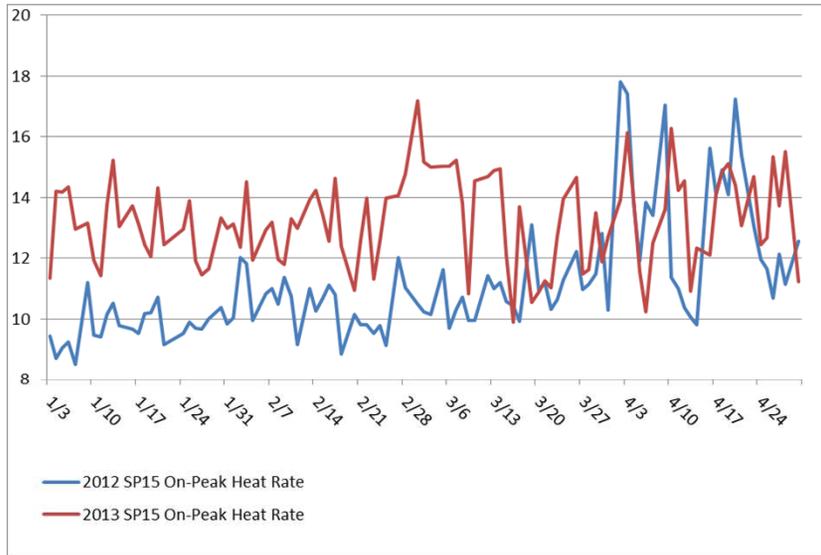


# Import Volumes at Pac Northwest CAISO tie-points



Source: CAISO

# Heat Rates – Up in California due to carbon



# Conclusions



- Market prices inside California have risen to reflect the cost of carbon
- Carbon does not seem to have impacted imports into California
- Market participants have adjusted behaviors as a result of carbon
  - California generators
  - California utilities outside the state
  - Utilities outside California
- In the longer term markets, carbon drives power
- In the shorter term markets, power drives carbon
- Trading liquidity inside California is still being hampered by regulatory uncertainty