

Markets? We don't need no stinking markets! Uh, yes we do...



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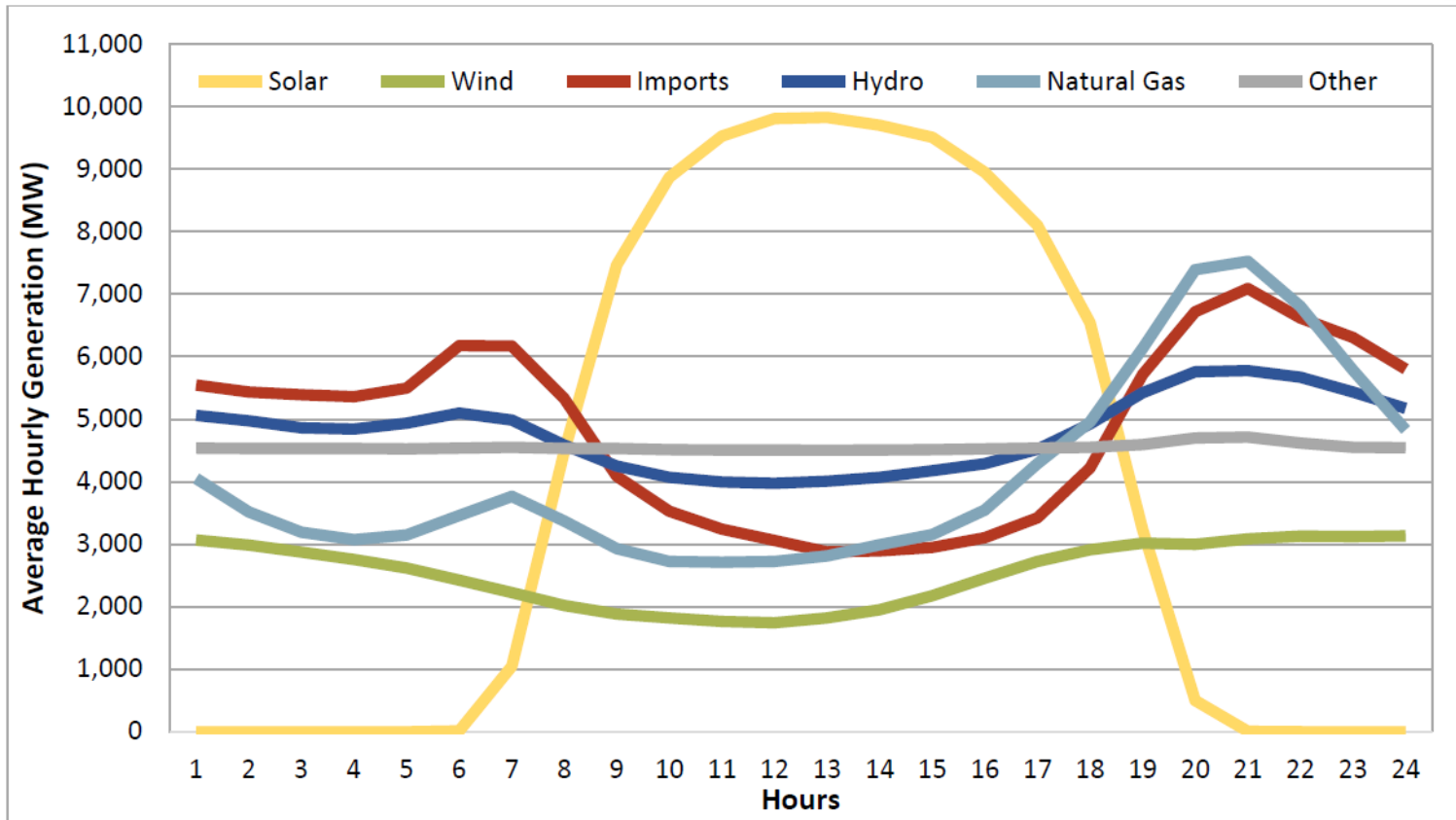


WHAT HAS CHANGED?



- The varied business structures in the West (Public Utilities, Federal Agencies, IOUs, Cooperatives, etc.) made for mixed incentives for considering market formation
- But, the rapid integration of variable resources like wind and solar changed the incentives
 - Variable resources are better integrated when a network dispatch of all resources over a broad area is in place
 - Share the pain, share the wealth
- Experience of public power in MISO and SPP probably informative for Western participants

Sharing the Resources: Dispatch



Source: DMM 2Q Report

But how do you start?



- Market formation in the East was easier to get going
 - Growth out of tight power pools
 - MISO, SPP organic growth was harder
- California antipathy with its IOUs made legislation to form an ISO easier than other states
 - But the antipathy caused problems down the road
- Getting going in the West a challenge as region does not have strong regional institutions
 - EIM link to CAISO was easier than starting a new organization

Market Formation: What works?



- From a strict efficiency standpoint, a West-wide network dispatch (market) would be best
 - Real-time and day-ahead energy market
 - Rules for regional mechanism (of some kind) for “resource adequacy” (RA)
 - Transmission planning
- Differing cultures in the West may make this too difficult
 - For example, California sensibilities different than Colorado
- Certainly possible to have more than one ISO in the region that can still transact with each other
 - Experience of East where “joint operating agreements” (JOAs) between PJM, MISO and SPP make cross-border trade relatively easy

California does its own thing



- California Public Utilities Commission (CPUC) in charge of capacity market design in CAISO – FERC has not sought to assert jurisdiction of a product that is part of CAISO tariff
 - CPUC recently made major changes to RA import rules
 - RA currently bilaterally procured to include local RA needs, deliverability, etc.
 - RA market design under review in CPUC procedure
- California Energy Commission (CEC) determines peak load each year as basis of RA procurement by LSEs
- CAISO in charge of reliability but not RA product except to determine when RA may be short
 - Ability to procure shortfalls through short-term “capacity procurement mechanism”
 - It has been used the last two years as load forecast of CEC has been different than CAISO estimates and as renewable capacity availability has been more accurately counted (Effective Load Carrying Capability – ELCC)
- California is a net importer at peak and assumes the possibility of 12 GW of imports to balance system

CAISO EIM: Merger of Equals?



- EIM entities are taking an incremental approach to forming something like a regional market
 - Energy Imbalance first
 - Try to fashion a day-ahead market while transmission owners still control the transmission
 - Region outside of CAISO trying to tackle RA and transmission planning separately
- Can't just "join" CAISO (turn over operation of transmission) because of CAISO governance
 - Board appointed by California Governor
- Work around to get benefits of a market still in progress
 - "Enhanced Day-Ahead" design underway
 - Will see how design can get around problem of transmission control and non-discriminatory dispatch for everyone

Other market platforms



- CAISO EIM platform has proven benefits, but further evolution may be difficult & California specific rules may be problematic
- The possibilities of other market platforms may make for better market formation:
 - Competition between platforms may make for better structures
- Will the regional players find enough commonality to work together in places like the Mountain West?
 - IOUs and Public Utilities find common ground?

The Need is Now



- State policies are causing rapid changes in the regional generation mix
 - Coal is being pushed out by economics, regulation & legislation
 - Natural gas is not popular in coastal West
 - Hydro capacity has probably reached its limits
 - Renewables are integrating rapidly in coastal West
- Balancing the system made easier with network dispatch over a broad area
 - Market & RA rules help inform transmission planning
- Can we wait any longer to move toward markets?