

Participating Intermittent Resource Program (PIRP)

Frank A. Wolak
Department of Economics
Stanford University
wolak@zia.stanford.edu
<http://www.stanford.edu/~wolak>
Chairman, Market Surveillance Committee
California ISO

PIRP

- Goals of PIRP
- Incentives created by PIRP
 - Market efficiency costs
- Long-term viability of PIRP
- Subsidizing renewable resources without degrading market efficiency

Goals of PIRP

- Foster participation of renewable resources in California ISO markets
- Currently 1,100 MW out of 3,300 MW intermittent resources (wind and solar) participate
- During initial stages of California ISO market PIRP program may have made sense
 - Reduce cost of forecasting resource availability and managing hourly imbalances
 - Socializing intermittency costs likely to result in small market inefficiencies

Incentives Created by PIRP

- Intermittent resources have limited incentives to minimize hourly energy imbalances
 - Limited incentives to forecast their own output accurately
- Intermittent resources have strong incentive to locate where they produce the most energy annually
 - Not where they produce by most valuable energy as measured by wholesale market revenues from sale of energy produced
- Intermittent resources have limited incentive to increase the “dispatchability” of units through addition of storage technologies or hybrid technologies (combined natural gas and intermittent resource)

Long-Term Viability of PIRP

- Magnitude of subsidy to intermittent resources grows if PIRP generation share remains the same as amount of intermittent resources increases
- Extent of overall intermittency likely to increase for given amount of PIRP resources
 - Incentive to locate new capacity to maximize annual energy production
 - Limited incentive for storage investments with intermittent resources
- Conclusion—PIRP is unlikely to be viable in long-term with amount renewable generation on system envisioned by California policy

Subsidizing Renewables

- Treat all resources symmetrically
 - Renewable resources that do not submit day-ahead or hour-ahead schedules are paid real-time price
 - Renewable resources that submit day-ahead or hour-ahead schedules should be subject to hourly imbalance charges
- Do not subsidize renewable energy on a per unit basis
 - Fixed monthly or annual subsidies to renewable resources do not impact their operating decision or offer behavior
 - Per unit subsidies adversely impact both
- Conclusion—Phase out PIRP and phase-in subsidies to renewables (if they are necessary to achieve state policy goals) in a manner that does not adversely impact market efficiency or system reliability

Questions/Comments