CALIFORNIA ISO

California Independent System Operator Corporation

PIRP FAQs – Part I

Participating Intermittent Resources Program

The following paper is meant to give general answers to FAQs. Answers are subject to change.

Q1: What is the Participating Intermittent Resources Program (PIRP)?

The Participating Intermittent Resource Program allows intermittent resources (i.e., wind and other resources with an uncontrollable fuel source) to schedule energy in the forward market without incurring imbalance charges when the delivered energy differs from the scheduled amount.

Q2: What are the benefits/costs if participating in PIRP?

Participating Intermittent Resources that schedule in accordance with the hourly forecast will not receive Imbalance Energy charges for deviations across a ten-minute Settlement Interval. Instead the mega-watt deviations from a Participating Intermittent Resource will be netted across a calendar month and settled at a weighted-average price. With an unbiased, state-of-the-art forecast, the expected net deviation should be close to zero. Deviation Replacement Reserve Charges and Above-Cap costs will not apply to Participating Intermittent Resources. The ISO is also implementing Uninstructed Deviation Penalties with Phase 1b of MD02. Participating Intermittent Resources that schedule the forecasted amount will be exempted from these penalties.

Participating Intermittent Resources must pay a forecast fee of $0.10 per mega-watt hour of delivered energy to aid with the costs of the forecasting service, which will be billed on a monthly basis. Participating Intermittent Resource must also sign all ISO agreements, install ISO meters, and a Data Processing Gateway (DPG) for real-time telemetry.

Q3: What are the participant requirements for the PIRP program?

The requirements for participation in the PIRP program are described in the ISO Tariff in the Eligible Intermittent Resources Protocol (EIRP) Section 2.2. EIRP available at http://www.caiso.com/docs/2002/04/23/2002042316014715675.pdf. A Participating Intermittent Resource must comply with the following requirements:

- Must sign the Participating Generator Agreement.
- Must sign the Meter Service Agreement.
- Must sign the Letter of Intent (form available at http://www.caiso.com/docs/2003/02/27/2003022709354726559.pdf)
- Must be at least 1 MW rated capacity.
- May include one or more Eligible

Intermittent Resources that have similar response to weather conditions or other variables relevant to forecasting Energy, as determined by the ISO.

- Must be electrically connected at a single point on the ISO Controlled Grid, except as otherwise permitted by the ISO on a case-by-case basis as may be allowed under the ISO Tariff.

Must be scheduled by the same Scheduling Coordinator for all Eligible Intermittent Resources aggregated into a single Participating Intermittent Resource.

- Must install a Data Processing Gateway (DPG).
- Must provide the Forecasting Service with sufficient data to support an accurate and unbiased forecast.
    - Metering data provided to the ISO for further confidential inclusion into the Forecasting Service are as follows:
        - Wind Speed (meters/second).
        - Wind Direction (degrees bearing from True North)
        - Ambient Temperature (degrees Celsius)
        - Barometric Pressure (Hectopascals)
- Must provide information regarding the MW generation capacity and associated Wind Turbine hub height.
    - For example, a wind-energy project with thirty 0.2 MW wind-turbines at 30 ft. above ground level (AGL) and forty 1.5 MW wind turbines at 55 ft AGL. This wind project would then supply the ISO the following information: 6 MW (30 x 0.2 MW) at 30 ft. and 60 MW (40 x 1.5 MW) at 55 ft (both heights at AGL).
- Must provide information regarding the Latitude and Longitude location of wind-generation site.
    - For example, a wind-energy site would provide the following data from its latitude and longitudinal location: 33° 49' N; 116° 32' W

Q4: What is the name of the vendor the CA ISO has contracted to provide the Day-Ahead/Hour-Ahead MW Generation Forecasts? What was the selection process?

The selected vendor is True Wind Solutions, LLC (TWS).

The selection process was based on evaluation of responses to an RFP issued by the CAISO. The evaluation included a variety of criteria including: Cost, Proven ability, Robustness and Transparency of Models, Electronic Security, Viability of Company, Forecast Model Accuracy, etc. There were a total of 24 evaluation items as well as a requirement to submit sample forecasts based on ISO provided data. A total of 4 vendors were evaluated. The short-listed Vendors were asked to conduct a test forecast for the datafiles provided by several wind generation Projects. The results of these tests were evaluated in terms of their accuracy and bias and were used as one of the Vendors' selection criteria.

Q5: How will the Wind Energy forecast model adjust its schedules with regards to intermittent resource outages and derates?

Participating Intermittent Resources must utilize the SLIC Web client"[1] to inform the ISO of a de-rate or outage which will limit generation output. This information will be passed on to the Vendor, who will incorporate into the next wind generation forecast. Scheduled outages and de-rates must be reported 72 hours in advance. Un-scheduled outages must be reported immediately and will be incorporated into the next forecast.

Due to the time requirements of the forecast delivery there is the potential for a 1-hour delay in reflecting an un-scheduled outage into the forecast. Intermittent Resources should continue to schedule consistent with the forecast to maintain their Participating Resource status and have deviations netted over the month.

Q6: How will the ISO monitor the accuracy of the model, both overall and for particular generating projects?

The California ISO will be constantly monitoring the accuracy and the bias of forecasts provided by the selected Vendor. The process will be performed for each Participating Intermittent Resource (PIR). At the initial stages, the forecast error and bias will be only monitored for the 2.75 hour ahead forecasts (that is, for the next operating hour forecasts). The forecast error will be calculated for each operating hour as the difference between the forecasted average MW hourly production and the actual average MW production. The accuracy requirement is established for the Percent Mean Absolute Error (MAE) determined for each PIR, for each calendar month, for the next operational hour forecast (to be submitted 2.75 hours before the actual operational hour begins), in percent of the rated capacity. Unavailable periods are not accounted for in this calculation.

The MAE formula is as follows:

$$MAE = \frac{\sum_{\substack{\text{1-hr Avaialable Periods} \\ \text{in the Calendar Month}}} \left[\frac{MW\_Forecast - Actual\_MW\_Production}{MW\_Project\_Rated\_Capacity} \right]}{\#\_of\_Avaialble\_1\text{-}hr\_Periods\_in\_the\_Calendar\_Month} \quad \%$$

The MW_Forecast and Actual_MW_Production numbers are 1-hour forecasted and actual averages of the PIR's power production. The required forecast accuracy is established as MAE = 12% or better (after a 60-day model training period for each PIR). The accuracy requirements were selected to achieve an acceptable compromise between the performance of forecasting model and the cost of forecasting service. Unavailable or compromised evaluation periods are not accounted for in this calculation. The Vendor is strongly recommended to monitor the MAE for sliding 1-month windows on a continuous basis in order to early detect possible calendar month violations. The Vendor is required to analyze reasons for any violations, communicate them to the ISO and PIRs through documentation, and take prompt and adequate measures to mitigate any future violations.

The forecast bias requirement is established as the percent energy error calculated for each calendar month as follows:

[1] The Scheduling and Logging for ISO California (SLIC) Web-client provides an interface for Market Participants to log requests for partial or full outages of their resource(s) as well as submit notifications regarding resource ramp rate changes (performance).

$$\text{Bias} = \frac{\sum_{\substack{\text{1-hr Avaialable Periods} \\ \text{in the Calendar Month}}} [\text{MW\_Forecast} - \text{Actual\_MW\_Production}]}{\sum_{\substack{\text{1-hr Avaialable Periods} \\ \text{in the Calendar Month}}} [\text{Actual\_MW\_Production}]} \quad \%$$

Unavailable or compromised evaluation periods are not accounted for in this calculation. The required Bias accuracy is established as Bias = 0.6 % or better (for Hour-Ahead forecasts). The Vendor is strongly recommended to monitor the Bias continuously in order to early detect possible calendar month violations. The use of special bias compensation algorithms is strongly recommended

Q7: How will the model track, and correct, any forecasting errors for specific intermittent resources?

The California ISO will be continuously monitoring and improving the accuracy of forecasts provided for each Participating Resource as described in Q-5. The California ISO has conducted a thorough Vendor selection procedure to provide the state-of-the-art wind generation forecasting service. The True Wind Solutions Company (TWS) that is finally chosen as the Vendor. It is well known globally for its successes and expertise in this area. TWS will be using a combination of powerful methods to pursue the accuracy and bias requirements established by the California ISO. These include advanced weather forecasting and production models, statistical models, and Artificial Neural Networks. The True Wind Solutions Company will be also implementing the modified Box-Jenkins ARIMA model and bias compensation scheme previously developed by the California ISO. The True Wind Solutions Company will also employ its ensemble forecasting strategy where several forecasting methods are working in parallel, and the most accurate forecasts are dynamically selected for each operating hour.

Q8: What is the expected forecast error for any given month?

The required forecast accuracy is established as the calendar month Percent Mean Absolute Error MAE = 12% or better (after a 60-day model training period for each project). The required Bias accuracy is established as Bias = 0.6 % or better (for Hour-Ahead forecasts). Details of computing the MAE and Bias are explained in our response to the question.

Q9: What will the ISO do if the errors are greater than expected?

The Vendor will be penalized for violations of the accuracy and bias requirements. The penalty for excessive monthly forecasting error or bias is set at 20% of the amount due to the Vendor for that month (on a MWh forecasted pro-rated basis). The ISO will reserve the right, under the Consulting Agreement, to terminate the Agreement if the Hour-Ahead performance criteria are not met on a regular and timely basis.

> Below, the monthly Performance Penalty charge (that the ISO would withhold from its service payment) is calculated. On a monthly basis, participants in violation of either error or bias accuracy parameters will have their installed capacity summed and divided by the total installed capacity of all the participating resources for that billing month and serve as the pro-rata Performance Penalty.

$$Performance\_Penalty = \frac{\sum_{j=1}^{x} Installed\_Violating\_MW_j}{\sum_{k=1}^{n} Installed\_MW_k} * 20.0\% * Monthly\_Service\_Fee$$

where,

x	=	Number of Participating Resources in violation of designated accuracy parameters.
j	=	Participating Resource in Accuracy Violation for billing month.
k	=	Participating Resource
n	=	Total Number of Participating Resources for billing month.

Shortly before a one-year performance evaluation period, Hour-Ahead Forecast Error and Bias tolerances will be revisited by both the ISO and the Vendor. The ISO may, at that time, require the current error and bias tolerances narrow towards their ultimate target values. Additional modeling components/methodologies may be required by that time as well in order to achieve improved performance results.

Q10: What if the forecast error is high?

The forecast provided by the selected Vendor will be used by the Scheduling Coordinators and the California ISO to build hour-ahead schedules. (In the future, it is expected to employ day-ahead forecasts for building the day-ahead schedules). Forecasting and scheduling errors will be then mitigated in the course of the real-time Supplemental Energy Dispatch and Automatic Generation Control (AGC). Currently, the California ISO Supplemental Energy Dispatch is manual and is usually performed several times each operating hour; in the new California ISO Market Design MD02 it will be automated with the help of the Security Constrained Economic Dispatch (SCED), which will be ran every 5 minutes. The SCED and AGC will account for and react to all observed deviation of the actual wind generation from its schedule. The California ISO and Electric Power Research Institute (EPRI) have started a Collaboration Project aiming to develop a short-term regional wind generation forecasting tool to be used along in the SCED process. The tool will forecast the regional wind power production for all wind generation projects regardless their participation in PIRP. It is expected that the tool will allow the ISO to significantly improve the quality of balancing the uninstructed deviations of wind generation from its schedule.

Of course, if the forecast error is high, it will result in a certain increase of the supplemental generation and regulation reserve requirements, which needs to be procured in the California Energy Market. The magnitude of this negative impact is now studied by the California ISO and several Consultants within the CEC/CalWEA Project “RPS Integration Analysis”.

It needs to be stressed that the Participating Intermittent Resources will not be held responsible for the hourly deviations of their actual MWh production from the schedule. Participating wind generators that submit their schedules based upon the forecasts will escape the uninstructed deviation charges and instead be assessed deviation charges based upon monthly net deviations between metered and scheduled energy (Bias) will be applied. These monthly net deviations are expected to approach zero as the modeled forecasts produced by the Vendor provide unbiased results. The California ISO will be continuously monitoring the accuracy of forecasts provided for each Participating Resource as described The Vendor selected to provide wind generation forecasting services for the Participating Resources will be penalized for violations of the accuracy and bias requirements as described.

Q11: What if towards the end of the month, there seems to be a bias in one direction, will the forecast model adjust subsequent forecasts to make up for this bias?

The model will be self-correcting and will be constantly adjusting for bias. The forecasting service is required to meet specific performance standards regarding the accuracy of the forecast and does not anticipate having to make up for a large bias in one direction at the end of the month—bias will be minimal.

Q12: Describe the mechanics of the PIRP process. From where does the vendor's Day-Ahead/Hour-Ahead forecast come? Who will be entitled to receive the forecasts? What are the timing logistics of a) receiving the forecasts from the ISO and b) submitting the Day-Ahead/Hour-Ahead Schedules?

Please refer to the following document: "Wind Energy – MW Forecast Schedule Data Exchange". This document can be found at:

http://www.caiso.com/docs/09003a6080/23/ae/09003a608023ae11.pdf

Scheduling Coordinators (SCs) submitting schedules on behalf of the Participating Intermittent Resources (PIRs) will be provided digital certificates and passwords to access the Day-Ahead and Hour-Ahead Schedule Forecasts (ask your service representative about obtaining this).

It is up to the discretion of the SC/IR servicing agreement terms as to whether access is shared with the PIR.

Q13: What is the schedule for implementing the PIRP program?

Following are key milestones for the project:

DATE	MILESTONE DESCRIPTION
July 1st	*PIRP Program Initiation:* The ISO will begin collecting MET and generation data from wind-energy projects that are qualified to begin the PIRP Certification Process
Week of August 18th	*Market Simulation:* ISO will perform a simulation of the Day-Ahead/Hour-Ahead MW Forecast Schedule submittal processes from the ISO to PIR Scheduling Coordinators, and (if requested) the Schedule submission process from the SCs to the SI Workspace.
September 1st	*MW Forecast Schedule Initiation:* Both Day-Ahead and Hour-Ahead MW Schedules are provided to PIRP-certified resources on a daily and hourly basis, respectively.
October 7th	*PIRP-Express Initiation:* Wind-Energy projects with 60-days worth of correlating meteorological and operating output data, and fulfillment of the

	contractual obligations may apply to bypass the 60-day Certification Period.
Post-October	*PIRP Settlement Invoices:* Settlement billing invoices will contain new charges for the "monthly net" provided by the PIRP program.

Q14: Is connection to the Energy Communication Network (ECN) required for PIRP participation?

The EIRP Section 6 states, "The PIR must install and maintain equipment to collect, record and transmit data that the ISO reasonably determines is necessary to develop and support a forecast model that meets the requirements of EIRP 4." The current ISO standard is to provide The Energy Management System with data using the DPG[2] to transmit this data over the ECN.

Q15: When is the MCI to AT&T communications network going into effect?

Over the next year, all ISO Connected Entities (CEs) will be required to transition their network access to the new telecommunications services provided by AT&T. The conversion will affect any entity connected to the ISO's Energy Communication Network (ECN). There is a White Paper (located at http://www.caiso.com/docs/2003/01/14/2003011412333413451.pdf) intended to provide all ISO CEs with background information on the change, expected technical and financial impacts to ISO CEs, and an overview schedule for the conversion over the coming months[3].

Q16: What are suggested guidelines regarding on-site anemometer installations?

The quality of the MET data measurements for PIRs is dependent upon the placement of the indication equipment. The following are requirements and guidelines to how the equipment should be placed:

1. Ambient Air Temperature sensors should be placed exactly two meters AGL (above ground level)
2. It is also acceptable to place the temperature indication equipment at the point near the turbine where the wind sensors are located.
3. Placement of all the sensors should be indicative of an "average condition" location. "Average Condition" represents typical conditions that would be experienced by the participating wind turbines. . As such a requirement is somewhat subjective, no standard criteria are provided to the installation in this regard. Attention should be taken that the anemometers are not obstructed from the typical wind conditions
4. Placement of all the sensors should be indicative of an "average condition" location. "Average Condition" represents typical conditions that would be experienced by the participating wind turbines. Attention should be taken that the sensors are adequately shielded from solar radiation and yet not obstructed from the typical wind conditions. As such a requirement is somewhat subjective, no standard criteria are provided to the installation in this regard.
5. Wind measurement sensors (i.e. Wind Speed and Wind Direction) must be placed at the hub height of the participating turbine.

[2] Data Processing Gateway
[3] http://www.caiso.com/docs/2003/01/14/2003011412333413451.pdf

Q17: What meteorological measurements are required by the ISO via its Data Processing Gateway (DPG)?

The required generation facility data the DP[4]G must pass to the PIRP application is contained in the following table:[5]

Wind Speed	10-Minute interval ***vector*** average.* 10-Minute interval scalar average (Sampled Once-per-minute). 10-Minute interval scalar standard deviation
Wind Direction	10-Minute interval ***vector*** average.* 10-Minute interval scalar standard deviation
Air Temperature	10-Minute interval average (Sampled Once-per-minute).
Barometric Pressure	10-Minute interval average (Sampled Once-per-minute).
MW Generation	10-Minute interval average (Sampled Once-per-minute).
MW Availability	Hourly interval average (Sampled six times per hour).

*Vectoring average is implemented for Wind Direction and Magnitude to maintain wind metric integrity.

Q18: Can an intermittent resource engage in bilateral contract during its certification period?

Intermittent Resources that engages in a bilateral agreement during the certification period will be subject to the deviations settlements that may occur. Deviations from the schedule would be settled as any other generator deviating on a 10-minute basis.

Q19: What is the duration of time for the PIRP Certification Process? Is there anyway to accelerate or bypass this process?

The normal duration of time for the Certification Process is 60 days. If there is sufficient Meteorological data available from the site, subject to the requirement of Q13 including proper Met tower height, the data may be transferred to the Forecaster via CAISO. This latter option, called "PIRP-Express", will be available the second week of October (tentative).

Q20: Which forecast(s) (day-ahead or hour-ahead) are the participating intermittent resources required to submit in order to receive the PIRP program benefits?

To be eligible for monthly deviation netting the Hour Ahead generation schedule must be consistent with the Hour Ahead wind generation forecast.

Q21: How long is the commitment to the PIRP when signing the Letter of Intent?

[4] The DPG is sampling all data at 4 second intervals with averaging happening in the PI system.
[5] Intermittent Resource Scheduling Forecast Service Provider

The commitment to the PIRP is minimum one year. The length may be longer as indicated by the Letter of Intent.

Q22: How is the wind site data (meteorological and operational) treated during the MW Forecasting process?

The ISO will transfer PIR meteorological tower data, generator output, and de-rate information to the Vendor every ten minutes via the ECN. This information, together with other information gathered form the vendor, shall be used by the vendor to prepare timely generator output forecast to the ISO. The vendor will then provide generation forecast information. To the ISO on a day ahead and an hour ahead basis via the ECN. The day ahead forecast shall be transmitted to the ISO by 0830 daily for the next day The final hour ahead forecast for each of the next seven hours will be transmitted no later than 30 minutes prior to the beginning of each operating hour.

As discussed in the ISO's contract with the Forecast Service Provider (FSP), meteorological and operational data is considered confidential and proprietary by both the ISO and the FSP.

Q23: What changes are planned with the SI Workspace?

An additional Phase 1 validation rule will be added. This validations will reject any PIRP schedule that includes an adjustment bid or congestion management flag = "yes".

Due to the relatively un-controllable nature of intermittent resources, such resources are considered to be price takers for transmission and not permitted to participate in inter-zonal congestion.

Q24: How will the Scheduling Coordinators submit PIRP forecast schedules?

Scheduling Coordinators will submit in either the DA or HA resource specific energy schedules through the ISO SI Workspace. This is the same process for submitting any schedule to the ISO. The HA schedules must be consistent with the forecast to be eligible for monthly deviation netting.

Q25: Will the ISO relax balancing rules for participating intermittent resources?

At this time, the ISO is not planning on relaxing the balanced schedule rules. When Phase 2 of MD02, or Integrated Forward Markets, is implemented then the balanced schedule rule will be relaxed and the ISO will provide a market for forward Energy.

Q26: What if Ancillary Service bids submitted by an Intermittent Resource?

Any resource should not submit an Ancillary Service bid if they are not certified for that service. Although there are no validation measures currently in place to exempt resources that are not certified from bidding, the ISO does have after-the-fact programs that check resources that have been awarded an Ancillary

Services. If a PIR submits an Ancillary Service bid or Supplemental Energy bid, then there are not participating in the program and will be subject to normal settlement for all Generating Units.

Q27: What price are PIRP participants paid for energy produced during the certification process?

As with all generators, positive uninstructed energy is settled at the decremental MCP currently. With Phase 1b there will be a single zonal Energy price and uninstructed Energy produced from PIRs will be paid that price in each interval.

Q28: Are intermittent resources exempt from daily-uninstructed deviation, above-cap, and replacement charges while undergoing the certification process?

There are no exemptions from Imbalance Energy, above-cap, and deviation replacement reserve charges when the PIR is under-going certification since there is not an unbiased forecast schedule for the PIR to use. When Uninstructed Deviation Penalties are implemented, resources that are being certified will be exempt from those penalties for the 60-day period since they are undergoing a certification (or "scheduled") test

Q29: How will scheduling for an intermittent resource take place during its PIRP certification process?

The Forecasting Service will only collect data from the PIR during the certification process and will not be providing a forecasted schedule. During the certification process, the resource will not schedule according to a forecast, so Section 11.2.4.5 will not apply (netting charges in month). If units have ISO meter, then they could operate "uninstructed" and receive the DEC price for all Energy produced. If all of a unit's Energy is uninstructed (i.e., there is no forward schedule) then the unit will not be exposed to Above-cap costs and Deviation Replacement Reserve charges. If unit chooses to submit a forward schedule during certification period, then the unit will be settled as all other Generating Units. With Phase 1b implementation, ISO will have single Energy price and the uninstructed Energy would be paid that single price. Phase 1b Uninstructed Deviation Penalties will not apply to intermittent resources during the certification process- ISO will use exemption called "scheduled test". The PIR will have an outage card that shows it is participating in a test or in this case a certification process.

Q30: Can the ISO move up the transmittal of the forecast to the Scheduling Coordinator to 30 minutes before the close of the Hour Ahead market instead of 15 minutes?

The CAISO renegotiated with the Forecaster to push the MW Forecast Schedule submission to the Participants up 15 minutes. This will give participants 30 minutes to submit their HA market schedules.

Q31: How will transmission losses be handled with Phase 1b?

The upcoming Phase 1b filing includes language in Section 11.2.4.5 to net any transmission loss obligation from PIRs that schedule in accordance with the forecast over a calendar month and charge or pay that net amount at the weighted-average MCP. The ten-minute interval charges will go to the balancing account with other interval charges.

Q32: What if there is intra-zonal congestion? What if there is an uneconomic adjustment for congestion that is not reflected in the forecast?

Intra-zonal congestion will be addressed after the Hour Ahead market is final. If intra-zonal adjustments are needed they will be recorded for settlement and included when determining any uninstructed deviations. See answer to Q7.

Uneconomic adjustment made by congestion management for inter-zonal congestion will be reflected in the final Hour Ahead schedule. The wind generator has two options:

1. Generate un-instructed and allow monthly netting to minimize financial impact.
2. Adjust wind generation output in real-time to match final HA schedule.

Q33: Would the model be run before ISO's makes intra-zonal adjustments in real-time?

No. If intra-zonal adjustments are needed they will be recorded for settlement and included when determining any uninstructed deviations. See answer to Q7.

Q34: How will transmission-related curtailments be addressed in the forecast and/or the settlements?

For wind generation facilities that include transmission facilities on their side of the ISO meter, it is the responsibility of the generator/SC to inform the ISO of a curtailment that will limit the wind farm output. This should be reported through the SLIC web client.

For transmission related curtailments on the ISO controlled grid that would impact the ability of the wind generator to produce forecasted or available output, the ISO will issue a dispatch order to insure system reliability. Any such dispatch will be recorded for settlement and be included when determining uninstructed deviations.

For prolonged transmission related curtailments that impact wind generation output the ISO will submit a de-rate for the resource(s) consistent with known limitations.

Q35: What are the protocols for a resource experiencing a forced outage or derate close to or in real-time, such that the forecast from the vendor is clearly incorrect?

What are the protocols for a resource experiencing a forced outage or derate close to or in real-time, such that the forecast from the Vendor is clearly incorrect?

Due to the time requirements of the forecast delivery and Hour Ahead scheduling deadline there is the potential for a 1-hour delay in reflecting an un-scheduled outage into the forecast. Intermittent Resources should continue to schedule consistent with the forecast to maintain their Participating Resource status and have deviations netted over the month.

Although this will result in uninstructed deviations, the duration should be no longer than 1 hour. Un-scheduled outages must be reported immediately via SLIC[6] and will be incorporated into the next forecast.

The purpose of the Participating Intermittent Resources Project is to minimize uninstructed deviations due to wind/fuel supply. It is not intended to minimize exposure to equipment failure. However, the effect of these deviations will be softened through the netting, but no additional adjustment will be made.

Q36: Who should the Scheduling Coordinator or Wind-Energy Project contact if any issues or questions arise with regards to the PIRP program?

Jim Blatchford is the lead Account Manager for the PIRP program within CAISO Client Relations. He may be reached at 916-608-7051 or jblatchford@caiso.com .

[6] The Scheduling and Logging for ISO California (SLIC) Web-client provides an interface for Market Participants to log requests for partial or full outages of their resource(s) as well as submit notifications regarding resource ramp rate changes (performance).