California ISO
Shaping a Renewed Future

Renewable Integration Market Vision and Roadmap

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1 Introduction

California has been at the forefront of establishing energy policies and goals for more renewable energy sources. For many years, the state has had a Renewable Portfolio Standard (RPS) of 20% for 2010. Since then, the legislature has increased the target to 33% by 2020. In addition to a 33% RPS goal, approximately 12,000 megawatts of existing once-through-cooling (OTC) resources will be retired over this same period. These OTC resources provide power production flexibility and have load following capability, which are operating characteristics many renewable intermittent resources lack, but are essential to grid support.

The ISO began this phase of its renewable integration initiative in April 2011 focusing staff resources and eliciting stakeholder input on market enhancements that will help California meet its renewable energy goals while maintaining reliable grid operations and a stable, efficient wholesale electricity market. The ISO believes these challenges can be identified, assessed, and successfully met through well-designed and timely enhancements to ISO market rules and structures.

The ISO has been performing renewable integration studies for several years that continue to reveal the need for flexible resources that can accurately respond to dispatch signals and can quickly ramp to new operating levels. Additionally, these studies conclude that large amounts of low-marginal-cost renewable energy production will depress energy market prices, potentially undermining the commercial viability of flexible, conventional thermal resources. With this understanding, this initiative offers short-term market enhancements that incent resource flexibility through new market products and rules, and it address the need to keep flexible resources financially viable, and, therefore, available.

The renewable integration initiative was designed to be conducted in phases, so that near-term operational needs could be addressed first, followed by complementary market enhancements to meet medium- and long-term changes to California's electricity system. The renewable integration market vision and roadmap, which is the focus of this paper, is the initial product of the second phase of this initiative.

When the ISO began this phase of the initiative in April, the initial thought was to develop a comprehensive vision of the market design enhancements needed to address the impacts of renewable integration and a roadmap of how that vision would be developed into implementable proposals. The ISO sought a vision that would be flexible enough to accommodate less predictable developments such as the impacts of new technologies at both grid level and closer to the consumer side of the industry.[1] Stakeholders let the ISO know that this comprehensive approach was too much, too fast. Thus, the ISO revised its straw proposal taking a more incremental and evolutionary approach. The revised approach specifies three time periods for developing and implementing market enhancements – the short-term (now to 2013), mid-term

1 For example, although there are innovative activities in progress to increase the viability and adoption of local small-scale solar generation, electric vehicles, storage devices and programmable optimization of household energy consumption, the speed and magnitude of their adoption is currently highly speculative, and yet their impacts on the ISO markets and grid operation could be substantial once they reach a yet to be determined threshold.

(2013 to 2015) and long-term (2015 to 2020).[2] Stakeholder response to the revised straw proposal and its emphasis on mid-term enhancements were generally positive and supportive. The ISO has not dismissed the original idea of a more comprehensive approach to market enhancements, but will resume these discussions later after ISO staff has had an opportunity to assess the results of the short-term changes and have made considerable progress on developing the mid-term market enhancements.

Finally, the specific proposals initially discussed in this phase of the initiative will be developed more thoroughly in focused stakeholder initiatives. Management will be initiating focused stakeholder initiatives within the next month to expedite the design process for two of the most critical mid-term enhancements, as ordered by the Board at its August meeting. These two enhancements are extending the flexi-ramp constraint through development of a ramping capacity product, and revising the pricing and settlement regime for hourly imports and exports scheduled in the hour-ahead scheduling process to mitigate the impacts of real-time price discrepancies between internal locations and the interties.

2 Guiding Principles

The seven guiding principles serve as guideposts for assessing the comparative value and merits of the market enhancements proposed across the three phases described above. Moving forward, the guiding principles will help the ISO and stakeholders strike a reasonable balance between specific design options that have competing, yet beneficial objectives.

The seven guiding principles important to this initiative are:

Technology Agnostic

Principle	The ISO market accommodates new resource types based on their performance capabilities, without preference for specific technologies.
Expected Outcomes	✓ Enables any technically capable resource, regardless of technology, to provide services on a level playing field based on performance ✓ Resource technologies are viable based on innovation and competition rather than on resource-specific market rules ✓ Integrates devices that can both produce and consume energy

2 These time periods overlap because they are not intended to be strictly demarcated by the calendar, but are instead defined by their focus, objectives and ease of implementation, and as a result some later elements of an earlier period may be implemented around the same time as the first elements of a later period, as discussed in the accompanying white paper.

Transparent

Principle	The ISO market relies on price signals to incent participant behaviors that align with ISO operating needs.
Expected Outcomes	✓ Products are competitively procured through transparent market mechanisms ✓ Procurement targets are transparent and tied to operational needs ✓ Operating constraints are reflected in price signals, minimizing non-market solutions ✓ Prices incent performance from supply and demand that supports operational needs and encourages mitigation of generation variability and congestion ✓ Pricing rules allow transparent allocation of renewable integration costs

Deep and Liquid

Principle	The ISO market attracts robust resource participation.
Expected Outcomes	✓ More economic bids and less self-scheduling ✓ More price responsive demand ✓ Increased participation from resources in other balancing authorities through improved interchange scheduling ✓ Minimal seams issues with neighboring balancing authorities

Durable and Sustainable

Principle	The ISO market ensures an efficient mix of resources to maintain reliability and attracts new investment when and where needed.
Expected Outcomes	✓ Resources are commercially viable through a combination of ISO market revenues and forward contracts ✓ Resource fleet and mix enables the ISO to meet NERC and WECC reliability standards ✓ Resources are incented to enhance availability and performance ✓ Market products and rules are stable ✓ Known real-time market issues are addressed

Flexible and Scalable

Principle	The ISO market easily adapts to new and changing energy policy goals and resource mix.
Expected Outcomes	✓ Establish flexible market design that can accommodate reasonable changes in policies and technologies ✓ Recognize key linkages and coordinate with initiatives and proceedings of state agencies ✓ Compatible with high penetration levels of distributed energy resources

Cost-effective and Implementable

Principle	The ISO market design leverages existing ISO infrastructure, industry experiences and lessons learned.
Expected Outcomes	✓ A market design that is cost-effective to implement for market participants and the ISO ✓ Build on existing functionality and market systems to extent possible ✓ Design leverages the experience of other ISOs/RTOs as to what works and what does not; do not re-invent

Cost Causation

Principle	The ISO market allocates costs based on cost causation
Expected Outcomes	✓ Market participants better manage their load and resource variability ✓ More accurate forecasting and scheduling by market participants reduces operational uncertainty and associated costs

3 Overview – Market Vision and Roadmap

The purpose of this initiative is to review the ISO market, identify market enhancements necessary to integrate large amounts of intermittent renewable resources, and provide a roadmap for how the ISO will develop these enhancements. The roadmap leverages the existing market and infrastructure to address the transformative energy and environmental policies changes and the emergence of new technologies. The goal of this initiative is to identify incremental market enhancements and their proper staging for development to:

- Enable ISO operators to efficiently and reliably operate the grid with a more diverse and variable supply portfolio;
- Be flexible to accommodate future changes to energy policy goals and new resource types without requiring further substantial market changes; and
- Resolve known market and performance issues and minimize the need for manual interventions.

The market vision and roadmap provides a conceptual outline of market enhancements that the ISO plans to implement in three time periods. The three time periods and the objective for each period are as follows:

- **Short-term (now to 2013)**
  Increase dispatchability from intermittent resources and implement enhancements that increase market efficiency
- **Mid-term (2013 to 2015)**
  Ensure flexible resources remain viable and available and provide market incentives to increase resource flexibility
- **Long-term(2015 to 2020)**
  Understand short and mid-term impacts and consider west wide market developments prior to making further market reforms

The ISO purposely overlapped the three periods to convey the idea of market evolution rather than a market transformation, i.e. the periods conveyed do not represent explicit hard "cut over" design phases.

3.1 Short-term Enhancements

The short-term, now through 2013, is about implementing market enhancements already proposed or under development that add operational flexibility and enhance resource management. The renewable integration market and product review: phase 1 elements are also included in the short-term. These market and operational enhancements generally fall into three categories:

- **Ramp and Reserve Management Enhancements**
  Provide incentives and opportunities for resources to be more responsive and flexible
- **Renewable Resource Integration Policies**
  Adjust existing market rules to incent greater resource flexibility
- **Operational Enhancements**
  Enhance ISO operators' ability to better manage and commit resources

A summary by category of the short-term market enhancements and their target implementation dates are as follows:

Enhancement	Target Dates
Ramping and Reserve Management Enhancements	
Regulation Energy Management	*Proposed implementation: Spring 2012*
Flexible Ramping Constraint	*Proposed implementation: December 2011*
Enhanced Contingent/Non-Contingent Operating Reserve Management	*Proposed implementation: Spring 2012*

Enhancement	Target Dates
Renewable Resource Integration Products	
Dynamic Transfers	*Proposed implementation: Spring 2013*
Renewable Integration Market and Product Review Phase I: – PIRP Modifications – Lower Energy Bid Floor – Modify Bid Cost Recovery	*ISO Board decision: December 2011* *Proposed implementation: Fall 2012*
Operational Enhancements	
72-Hour Residual Unit Commitment	*Proposed implementation: Spring 2012*
More Granular Variable Energy Resource Forecasting for Residual Unit Commitment	*Proposed implementation: December 2011*
Startup and Shutdown Profiles	*Proposed implementation: Spring 2012*

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3.1.1 *Ramping and Reserve Management Enhancements*

– **Regulation Energy Management**

- *Proposed implementation: Spring 2012*

The regulation energy management product will allow non-generator resources, such as storage devices and demand response, to bid capacity into the ISO's regulation market more effectively and consistent with the continuous energy requirements for regulation service set forth in the ISO tariff. This product will add depth to the regulation market and provide the ability for non-traditional resources to provide more and potentially faster regulating resources in the ISO market.

– **Flexible Ramping Constraint**

- *Proposed implementation: December 2011*

The flexible ramping constraint will provide the on-line dispatch capability to efficiently follow net load variations. Additionally, the use of the flexible ramping constraint will reduce the need for the ISO to bias the load forecast in its hour-ahead scheduling process. This capacity will be available for five-minute dispatch in the real-time market. This feature is an important step toward having the flexibility to ensure sufficient ramping capability is available to the ISO operator as the resource fleet adds more intermittent resources.

– **Enhanced Contingent/Non-Contingent Operating Reserve Management**

- *Proposed implementation: Spring 2012*

The ISO plans to enhance the way it manages operating reserves. The ISO intends to designate the entire procured operating reserve amount as contingent or non-contingent based on a resource's contingent/non-contingent flag set in the resource's day-ahead bid. If any additional spin or non-spinning reserves are needed and procured in real-time, only the

incremental procurement will be considered contingency-only. Currently, both the initial and any incremental real-time procurement amounts are designated as contingent reserves even when the initial amount procured in day-ahead is non-contingent. With this enhancement, if a resource is flagged as non-contingent in the day-ahead, the amount of spin and non-spinning reserve procured in the day-ahead would remain non-contingent.

3.1.2 *Renewable Resource Integration Policies*

- **Dynamic Transfers**
  - *Proposed implementation: Spring 2013*

To ensure a more efficient dispatch of all ISO resources over the real-time operating horizon, the dynamic transfer proposal provides a scheduling option to eligible intermittent resources to submit dynamic schedules to the ISO to account for variation in their energy output within the operating hour, allowing the ISO to maintain the efficient operation of its interties and internal transmission.

- **PIRP Modifications**
  - *ISO Board decision: December 2011*
  - *Proposed implementation: Fall 2012*

This proposed settlement modification will allocate PIRP resource deviation settlement costs to the contracting load-serving entity instead of to those that have net negative uninstructed deviations. Provided this information, load-serving entities will be able to more effectively understand and manage resource specific PIRP settlement costs. This enhancement is simple, relatively easy to implement and should prove an effective incentive for intermittent renewable resource operators to accurately forecast energy production and minimize real-time schedule deviations.

- **Energy Bid Floor**
  - *ISO Board decision: December 2011*
  - *Proposed implementation: Fall 2012*

Negative bids serve an important function in the spot markets, by allowing resources to indicate their costs for curtailing energy output. Lowering the energy bid floor will provide more flexibility for resources to curtail energy production from previously scheduled levels, and by demand (including exporters) to increase energy purchases when there is excess supply and over-generation. The current bid floor level of -$30/MWh does not provide sufficient compensation for intermittent renewable resources to curtail output since such resources often receive additional revenues from outside the ISO market for their energy production, preventing these resources from submitting economical decremental bids. Given this constraint that limits resource flexibility, the ISO is proposing to move the bid floor in two stages over time, down to -$300/MWh.

- **Bid Cost Recovery**
  - *ISO Board decision: December 2011*
  - *Proposed implementation: Fall 2012*

The ISO is proposing to change its bid cost recovery rules so that netting occurs separately in the day-ahead and real-time markets. This change will provide a stronger incentive for resources to provide economic bids in the real time, which is vital to managing the grid as more variable energy resources come on-line. Revising the current netting methodology for bid cost recovery in the short-term is an important incentive to get more flexibility from intermittent resources.

3.1.3 *Operational Enhancements*

- **72-Hour Residual Unit Commitment**
  - *Proposed implementation: Spring 2012*

Currently, the RUC process only considers the commitment of short and long start units for the next 24-hour time horizon. Long start units need between five and eighteen hours to start and synchronize to the grid. RUC issues startup instructions to long start units only. Extremely long start units have a startup horizon greater than 18 hours. The current 24-hour day-ahead market RUC window is incapable of effectively utilizing extremely long start units in the day-ahead to avoid manual dispatch of these units in the real-time market. The ISO intends to extend the day-ahead market process to a 72-hour look-ahead for RUC as part of the day-ahead market rather than a single 24-hour look-ahead process. Modifying the current extremely long start commitment processes with RUC functionality will help the ISO better manage reliability and commit less expensive generation.

- **More Granular Variable Energy Resource Forecasting for RUC**
  - *Proposed implementation: December 2011*

Eligible variable energy resources (VERs) have the opportunity to bid or schedule in the day-ahead market. Consequently, the ultimate quantity scheduled from VERs may differ from the ISO forecasted deliveries from VERs. Under the current tariff, the ISO has the authority to adjust the forecasted demand either up or down for such differences by RUC zone where the VERs reside. The ISO intends to increase the granularity of the RUC zones to include VER zones to better capture locational VER forecast variability.

- **Startup and Shutdown Profiles**
  - *Proposed implementation: Spring 2012*

The ISO continues to enhance modeling of the startup and shutdown of generating resources to better account for the energy delivered during these periods in the real-time energy imbalance calculations. In the current implementation, a unit that is starting is assumed to jump to its Pmin at the startup time, and a unit that is shutting down is assumed to jump from Pmin to zero at the shutdown time. To better account for the energy delivered during the startup and shutdown, the ISO plans software enhancements to calculate linear startup and shutdown profiles corresponding to a unit's startup and shutdown ramp times.

3.2 Mid-term Enhancements

The mid-term period, 2013 through 2015, is currently the primary focus of this initiative. To address the challenges of increased production from renewable resources in the 2013-2015 period, the detailed planning and development of proposed market enhancements must begin promptly so that key policy decisions can be made in 2012 for implementation in the 2013 to 2015 period. The ultimate implementation schedule will be based on a detailed implementation impact assessment.

The proposed market enhancements for this period build on the short-term enhancements, with the intent of making refinements commensurate with the size and scope of the renewable integration challenges anticipated in the 2013 to 2015 timeframe. This period will see large increases in the amount of renewable resources connected to the ISO grid and in the amount of resources indirectly affecting the ISO grid by being connected to the distribution systems. The governor has indicated his desire to have 12,000 megawatts of distributed solar generation in California, and the utilities are already seeing rapid growth in the level of these distributed energy resources. Plug-in electric vehicles numbers are also beginning to ramp up in California. These vehicles may become sources of price responsive demand that can be used to help manage the grid.

Some of the mid-term market enhancements are extensions and or improvements on short-term enhancements, for example, the creation of a flexi-ramp product and improvements to the pricing and settlement of intertie bids and schedules. Other enhancements are aimed at aligning the incentives of market participants to behavior that helps the ISO manage the grid and prevents out-of-market options. These include allowing PIRP resources to submit decremental bids yet remain with the PIRP deviation averaging unless bids are accepted, pay for performance regulation, and cost allocation for flexi-ramp and other balancing service costs.

Market enhancements in the mid-term are briefly described as follows:

- **Flexi-ramp Product**
  - *Begin policy development: October 2011*
  - *ISO Board review: Spring 2012*
  - *Projected implementation: Spring 2013*

As directed by the Board of Governors in August 2011, the flexi-ramp product will extend the already approved flexi-ramp constraint to create an actual product to ensure that sufficient ramping capability is available in real-time and that resources are appropriately compensated for providing the service. The flexi-ramp constraint recently approved by the Board only addresses the upward ramping capacity, yet with large amounts of self-scheduling renewable generation coming on-line, studies indicate that over-generation is likely to occur. Addressing this operational concern will require downward ramping capability. Further, the short-term flexible ramping constraint does not contemplate day-ahead procurement of flexible capacity, and does not provide any opportunity for resources to indicate their desire and costs of providing this service. The flexible ramping product will be more robust and is intended to correct these issues.

A challenging flexi-ramp product design aspect will about how to allocate costs. Initially, the ISO plans to address flexi-ramp product cost allocation on an interim basis to enable its implementation as soon as possible. However, based on stakeholder feedback, the ISO is compelled to address cost allocation more fundamentally and as a separate concern under a 33% RPS rather than on a product-by-product basis. Stakeholders have shown a strong preference for cost allocation based on a cost causation principle. However, cost causation often means different things to different stakeholders, making application of the principle a challenge. The ISO and many stakeholders feel that cost allocation should provide market participants incentives to behave in ways that help the system. As the market evolves to help manage greater variability, the only way to address cost allocation is to look at market and product costs and incentives holistically and comprehensively.

The ISO will begin a stakeholder process to develop a flexi-ramp product in October.

- **Decremental Bidding from PIRP Resources**
  - *Begin policy development: Spring 2012*
  - *ISO Board review: Fall 2012*
  - *Projected implementation: Fall 2013*

A primary ISO objective is to maximize the ability of the ISO to manage the grid using markets. A key operator concern is having sufficient and dependable bids in real-time to resolve over-generation conditions. Most renewable generation, especially intermittent resources such as wind, submit self schedules and not bids, since their marginal costs for producing electricity are negligible, or even negative when tax credits and renewable energy credits are taken into account. For those renewable generators in the Participating Intermittent Resource Program (PIRP), the incentive to submit bids is reduced even further because the current program does not allow a resource to submit decremental bids to reduce output and still remain in PIRP for those hours. The ISO is proposing a set of rule and cost allocation changes that will provide PIRP resources the ability and incentive to submit decremental bids, while not excluding these resources from the program unless their bids are accepted. This will allow PIRP generators to respond to operational needs through market mechanisms, and will provide the ISO with a way to help mitigate over-generation through market bids, rather than through out-of-market mechanisms.

- **Intertie Pricing and Settlement**
  - *Begin policy development: October 2011*
  - *ISO Board review: Spring 2012*
  - *Projected implementation: Fall 2013*

A significant ISO concern is price differences between HASP and the real-time market. This difference has contributed to the real time imbalance energy offset uplifts. At its August meeting, the Board of Governors approved a proposal to reduce the real time imbalance energy offset by suspending convergence bidding at the interties. While this should reduce problems with current intertie pricing, it is not a long term solution. As directed by the Board of Governors, the ISO will consider potential solutions to intertie pricing and settlement to reduce the real-time imbalance energy offset and potentially provide a mechanism that allows intertie convergence bidding. Unfortunately, the ultimate solution may have to wait until the west moves to 15-minute interchange scheduling, if ever. As proposed in the initial straw proposal, a 15-minute market

and scheduling timeline does not appear implementable any time soon. For the mid-term, the ISO is considering two potential solutions to the issue of pricing and settlement at the interties. The first is to take a NYISO approach, which settles the interties at the real-time prices, but provides imports with bid cost recovery to ensure they receive at least their bid value for energy sold into ISO markets. The second is to require interties to settle at the ISO real-time price and hourly schedules settle as price takers without any cost recovery, but to implement this only during off-peak periods, and leave the on-peak settlement as it is today.

The ISO will launch the Intertie Pricing and Settlement stakeholder initiative in October.

- **Pay for Performance Regulation**
  - *Begin policy development: TBD based on FERC response*
  - *ISO Board review: TBD based on FERC response*

On February 17, 2011, FERC issued a notice of proposed rulemaking to address undue discrimination in the procurement of frequency regulation service (regulation) in organized wholesale electricity markets. The rules proposed by FERC would change how the ISO compensates resources providing regulation. The ISO submitted its response to FERC on proposed compensation for regulation to align incentives with performance. The ISO supports the notion of pay for performance regulation which could include a mileage payment along with an accuracy adjustment. The ISO expects a response from FERC soon and is, therefore, including this enhancement in the mid-term period.

- **Forward Procurement of Flexible Capacity**

As recently presented to the Board, ISO renewable integration studies make clear that to accommodate increased variable energy resources with increased intermittency, the ISO requires flexible resources be available in the real-time market. The ISO's research also indicates conventional, thermal resources will see a decrease in energy market revenues at the same time they will see an increase in the number of start-ups. The mandated elimination of once-through-cooling resources will require many conventional thermal plants to either repower or retire. If conventional, thermal resources retire due to insufficient revenues, the ISO will be left with limited flexible capacity to address future dynamic supply and demand conditions.

It is imperative that a forward procurement mechanism be developed to ensure sufficient flexible capacity is available to maintain grid reliability in a more dynamic operating environment. In anticipation of the future, the ISO is considering developing a forward procurement mechanism for resource capacity that is capable of providing required flexibility, i.e. ramping and balancing capacity. This proposed procurement mechanism is not intended to replace the CPUC's resource adequacy program, but, instead, to supplement the CPUC's existing resource adequacy procurement program, where such flexible capacity would qualify as RA capacity under the CPUC's RA program.

The ISO originally proposed this market enhancement as a long term initiative. However, after further discussion and stakeholder input, the ISO understands that developing a forward flexible capacity mechanism will be complicated and time consuming. This, together with a clear need for flexible capacity in the future, the ISO and certain stakeholders support starting this initiative sooner rather than later. In this spirit, the ISO is proposing a two-phased approach.

Phase One: Interim Flexible Capacity Procurement

- *Begin policy development: October 2011*
- *ISO Board review: Spring 2012*
- *Projected implementation: January 2013*

The ISO proposes to create an interim mechanism that administratively procures flexible capacity resources. This mechanism will use the existing Capacity Procurement Mechanism (CPM) as a starting point, but will specify attributes needed to qualify as flexible capacity. Additionally, the ISO may consider extending the procurement duration. Using the CPM as a starting point should enable the ISO to reach an interim solution more quickly to ensure that adequate flexible capacity is retained for the short-term while a permanent market-based mechanism is designed.

Phase Two: Flexible Capacity Procurement Market Mechanism

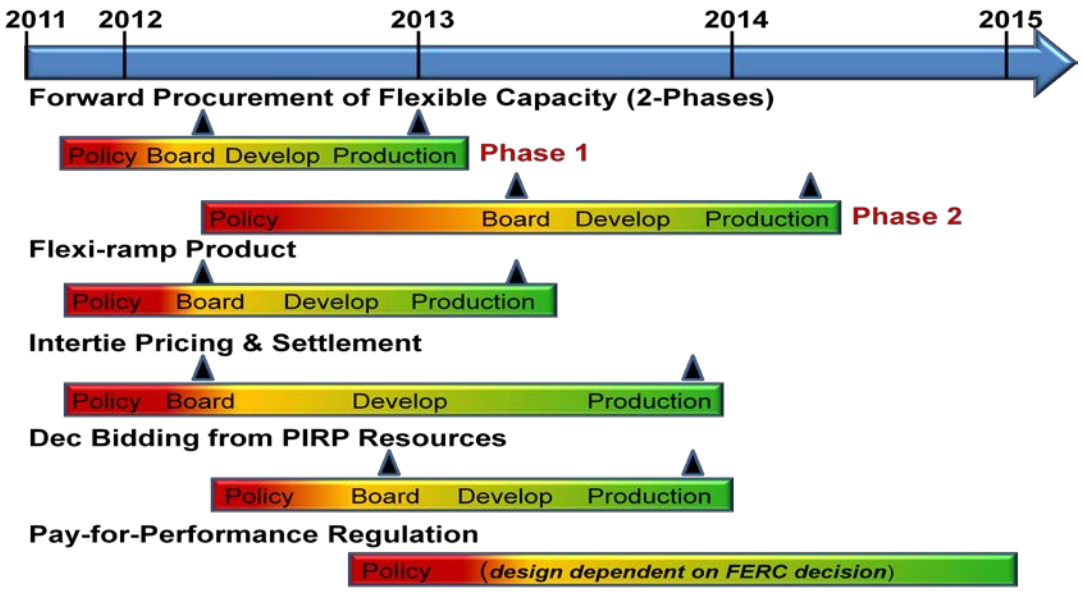
- *Begin policy development: Spring 2012*
- *ISO Board review: Spring 2013*
- *Projected implementation: Spring 2014*

Phase two of this initiative will focus on a permanent, market-based solution, replacing the interim solution developed in phase one. In this second phase, the ISO will identify the full-set of attributes the ISO will need to operate reliably under a 33% RPS. This procurement mechanism will be used to meet future flexibility needs three to five years into the future.

Again, this procurement mechanism is not designed to replace the CPUC's resource adequacy program. And in an effort to minimize the costs of procuring both sufficient flexibility and resource adequacy capacity, the ISO will work with stakeholders and the CPUC to design a product that is compatible with resource adequacy requirements and avoids over procurement of capacity by load-serving entities.

3.3 Roadmap of Mid-term Market Enhancements

Illustrated below is the projected mid-term (2013 – 2015) market enhancements roadmap.



3.4 Long-term Enhancements

The initial straw proposal was a much more comprehensive set of enhancements to the ISO markets. Based upon stakeholder comments and internal discussions, the ISO determined that accomplishing such a large change in such a short time was not supported by stakeholders. The ISO is proposing to take more time to consider comprehensive design enhancements so as to provide an adequate period to research, discuss and vet the ISO's original proposals further. Additionally, the more incremental and evolutionary market design approach in the short and mid-term will provide experience to inform future, more comprehensive market design enhancements. With this experience, the ISO and its stakeholders can consider whether more extensive market enhancements are warranted, including, for instance, implementing a 15-minute real-time market and creating a new real-time imbalance service product as was discussed in the initial straw proposal. Other market enhancements that may be needed in the long-term are a frequency response product, which may include inertia. However, given other priorities in the short and mid-term, these products will not be immediately considered for design and development.

4 Next Steps

The ISO will be commencing several new stakeholder initiatives to develop detailed design proposals for the mid-term market design enhancements. The ISO will also continue to work with stakeholders to refine the Renewable Integration Market and Product Review Roadmap as new information becomes available. Such revisions are likely to include the identification of new design enhancements as well as a reprioritization of previously identified enhancements. The ISO will provide periodic status reports to the Board in an effort to keep the board apprised of the planned evolution of the market design to facilitate the state's renewable energy goals while maintaining reliable grid operation and stable, efficient spot markets.