Reliability Coordinator
Rate Design, Terms, and Conditions
Straw Proposal

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Stakeholder Meeting
April 12, 2018

Agenda

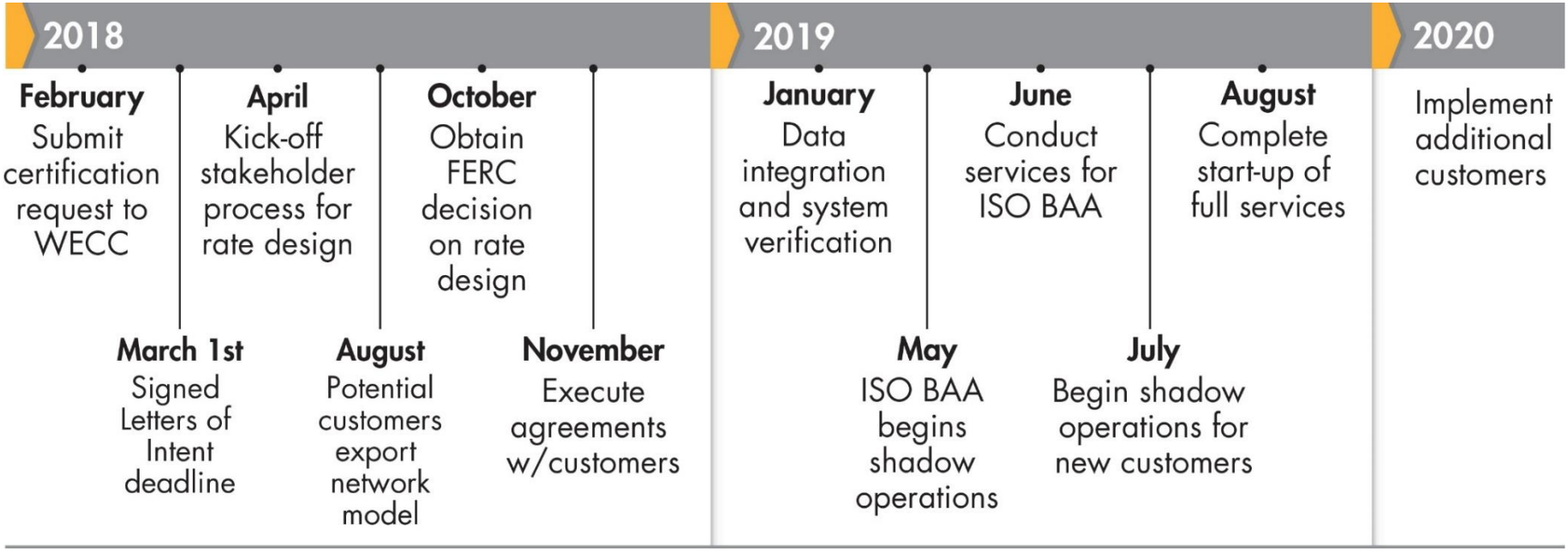
Topic	Presenter	Time
Introduction	Phil Pettingill	10:00 – 10:15 am
Project Overview	Phil Pettingill	10:15 – 10:30
Scope of Services and Supplemental Services	Phil Pettingill	10:30 – 10:45
RC Funding Requirement and Rate Design	Ryan Seghesio	10:45 – 12:00 pm
Lunch Break		12:00 – 1:00
Settlements Process	Ryan Seghesio	1:00 – 1:30
Initial Commitment and Exiting Terms	Ryan Seghesio	1:30 – 1:45
Reliability Coordinator Service Agreement	Ryan Seghesio	1:45 – 2:00
Onboarding	Craig Williams	2:00 – 3:00
Other Matters	Phil Pettingill	3:00 – 3:45
Stakeholder Process Overview and Next Steps	Kristina Osborne	3:45 – 4:00 pm

Introduction and Project Overview

Outline of overall project

- The Reliability Coordination Service implementation project includes 3 tracks:
  - Track 1: Development of Reliability Coordinator (RC) rate design, terms, and conditions through the open CAISO stakeholder process
  - Track 2: Development of key deliverables required for WECC certification coordinated by Reliability Coordinator Project Steering Committee (RPSC), working groups and task force teams
  - Track 3: Onboarding, implementation of tools and technology to integrate BA/TOP's applications and CAISO's applications, training, and customer service

Projected Timeline



Scope of Services and Supplemental Services

Scope of Services

Core Services	BA	Generation Only BA	TOP	TOP with Assets but No Load
Outage Coordination*	X	X	X	X
Next Day Operations Planning Analysis*	X	X	X	X
Real Time Situational Awareness*	X	X	X	X
Data Exchange to support Operations Planning Analysis and Real-Time Assessments*	X	X	X	X
System Operating Limit (SOL) Methodology	X		X	
System Restoration Coordination and Training (EOP-006)	X		X	X
Centralized Messaging for RC Area	X	X	X	X
Stakeholder/Working Group Processes	X	X	X	X
Secured Document Exchange (Plans, Procedures, Studies, Reports)	X	X	X	X
Data Exchange Services	X	X	X	X
Plan Reviews/ Approvals (EOP-005, 010 and 011)	X	EOP-011	X	X
Power System Network Modeling	X	X	X	X

* Currently provided by CAISO

Supplemental Services

- Hosted Advanced Applications
  - Survey underway to determine current level of usage and detailed requirements
  - Available to customers on same schedule as RC
  - Offered and billed separately from RC services
  - Pricing expected to be no more than current

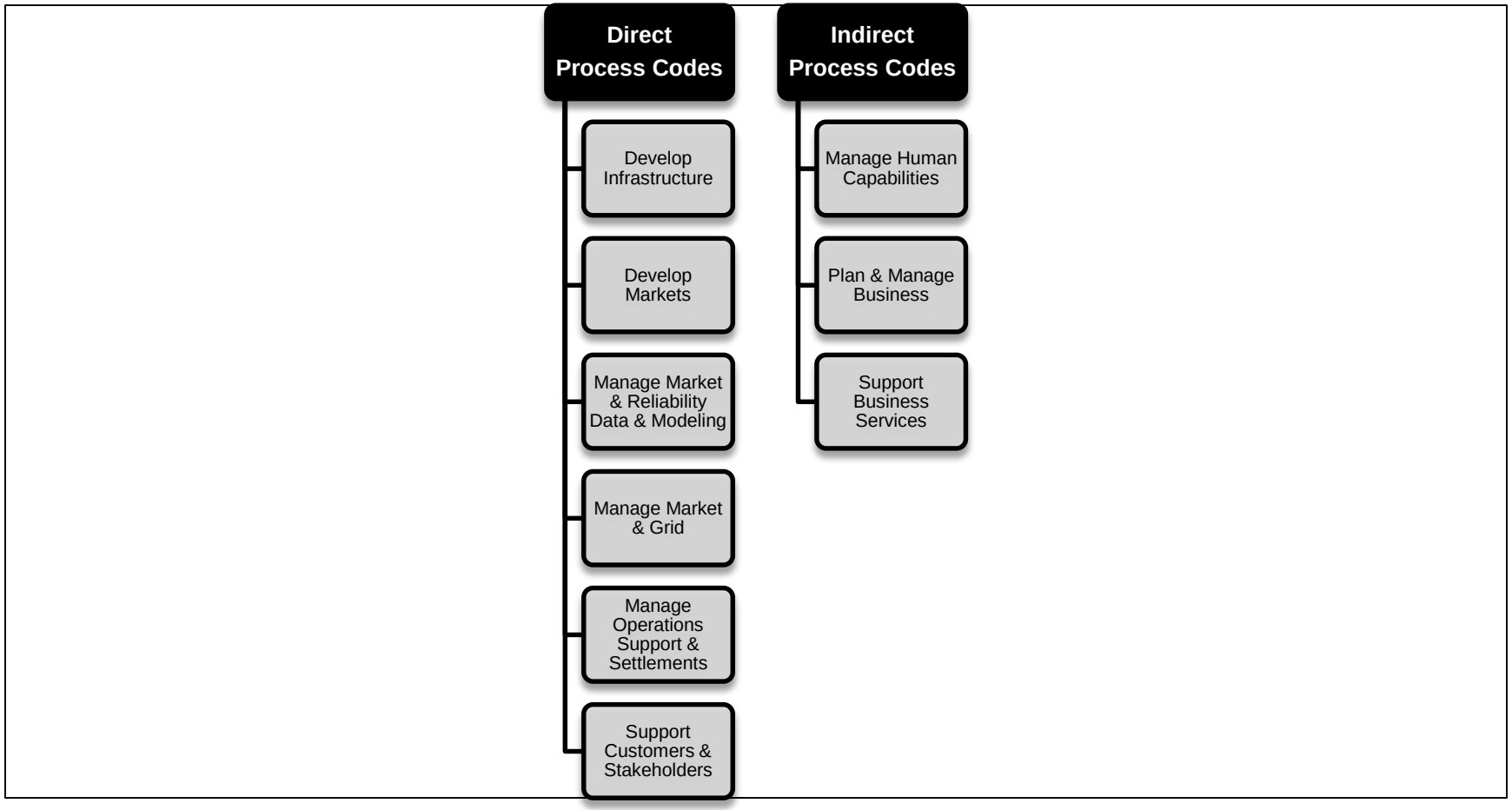
- CIP-014 Physical Securities Assessment
  - Available to interested parties
  - Offered and billed separately from RC services

RC Funding Requirement and Rate Design

Leverage existing activity based costing (ABC) system to determine the amounts charged for RC Services.

- ABC system provides greater transparency and granularity into use of resources
- Implemented from 2009 to 2011 and utilized for all rate design initiatives since 2011
- Detailed time tracking system used by all employees

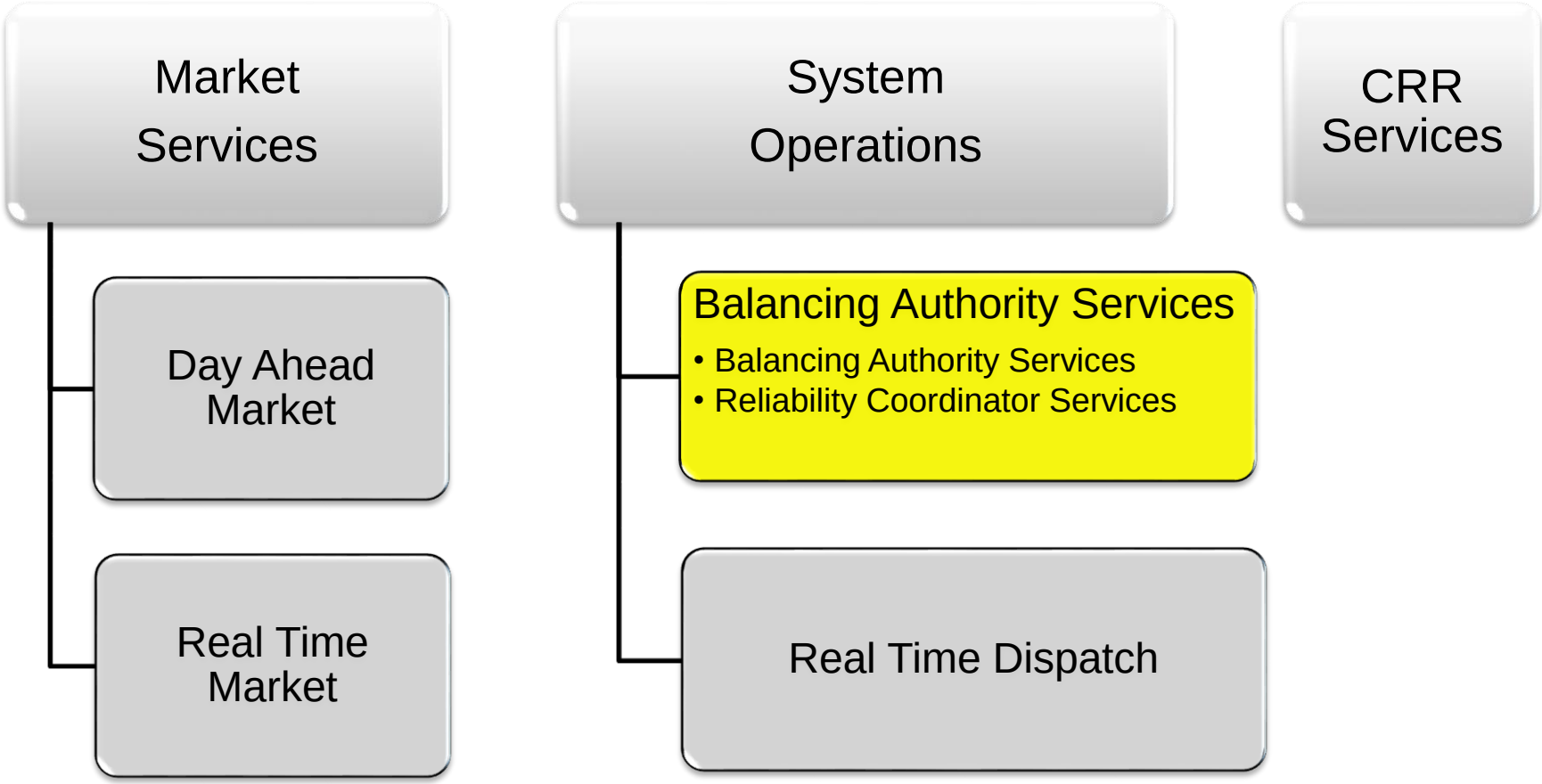
There are 9 process codes and 140 tasks used as part of the activity based costing system.



CAISO performs a triennial Cost of Service Study to update cost category percentages.

ABC Process Code	Level 1 ABC Activity	Number of Level 2 Activity Tasks	Number of 2016 Non-Administrative Hours Reported and Used in 2016 Cost of Service Study
DIRECT PROCESSES			
80001	Develop Infrastructure	9	85,174
80002	Develop Markets	9	61,237
80004	Manage Market & Reliability Data & Modeling	17	103,931
80005	Manage Markets & Grid	11	203,020
80007	Manage Operations Support & Settlements	16	91,830
80010	Support Customers & Stakeholders	8	70,178
INDIRECT PROCESSES			
80003	Manage Human Capabilities	8	28,137
80008	Plan & Manage Business	16	63,648
80009	Support Business Services	46	448,587
TOTAL			
9 Processes		140 Tasks	1,155,742 Hours

All direct tasks are mapped to CAISO's three main service categories using rules established in the Cost of Service Study.



Leveraging the 2016 Cost of Service Study data, CAISO estimated the impact of the RC Services using existing tasks.

Process Code	Process	Task Code	Task
80001	Develop Infrastructure	201	Develop & Monitor Regulatory Contract Procedures
80004	Manage Market & Reliability Data & Modeling	301	Manage Full Network Model Maintenance
80004	Manage Market & Reliability Data & Modeling	302	Plan & Develop Operations Simulator Training
80004	***Manage Market & Reliability Data & Modeling***	***311***	***Manage Operations Planning***
80004	Manage Market & Reliability Data & Modeling	312	Manage WECC Seasonal Studies
80004	Manage Market & Reliability Data & Modeling	314	Manage & Facilitate Procedure Maintenance
80004	Manage Market & Reliability Data & Modeling	316	Manage Systematic Approach to Operations Training
80004	Manage Market & Reliability Data & Modeling	317	Execute & Track Operations Training
80005	Manage Markets & Grid	355	Manage Outages
80005	Manage Markets & Grid	362	Manage Operations Engineering Support
80005	Manage Markets & Grid	365	Manage Real Time Ops - Transmission & Electric System
80005	Manage Markets & Grid	366	Manage Real Time Interchange Scheduling
80005	Manage Markets & Grid	369	Manage Real Time Operations Generation
80007	Manage Operations Support & Settlements	412	Manage Market Billing & Settlements
80010	Support Customers & Stakeholders	601	Manage Client Inquiries

Cost of Service Study method leads to an estimate of $5 million in direct costs associated with RC Services.

Assumptions:

- Using 2016 Cost of Service Study data
- RC area includes existing BA plus several EIM entities
- 32 CAISO employees recording time in RC related processes
  - Actual full time equivalent allocation: 28 FTEs

Indirect costs are allocated based upon the 28 FTEs.

- 2016 Cost of Service Study calculated $137.6 million indirect costs.
  - Support Staff
  - Facilities & Technology
  - Capital
- $137.6 million / 618 employees = $223,000 employee
  - includes new RC employees
- $223,000 * 28 RC FTEs = $6.2 million indirect cost allocation

6% of the Revenue Requirement will be used to develop RC Operating Budget.

2016 Revenue Requirement with RC Projections						
$$ in thousands						
Component	2016 RR	Market Services	System Operations	CRRs	RC	Indirect
Direct Costs	$ 76,084	$ 18,652	$ 40,619	$ 889	$ 5,035	$ 10,890
Indirect Costs	65,188					65,188
Non-ABC Costs	32,541	1,390	1,519	50		29,582
Total O&M	**173,813**	**20,042**	**42,138**	**939**	**5,035**	**105,660**
Debt Service	16,900					16,900
Capital	24,000					24,000
Other Income	(10,800)	(1,470)	(4,430)			(4,900)
Oper Cost Reserve Adj	(4,100)					(4,100)
Total Other Components	**26,000**	**(1,470)**	**(4,430)**	-	-	**31,900**
Total Before Allocation of Indirect and RC Income Offset	**199,813**	**18,572**	**37,708**	**939**	**5,035**	**137,560**
Direct Cost %						
Allocate Indirect		42,025	86,676	2,627	6,232	(137,560)
Total Before RC Income Offset	**199,813**	**60,597**	**124,384**	**3,566**	**11,267**	-
					6%	
Other Income: RC	(11,267)				(11,267)	
Total Revenue Requirement	**$ 188,546**	**$ 60,597**	**$ 124,384**	**$ 3,566**	**$ -**	**$ -**
Cost Category Percentages	**100%**	**32%**	**66%**	**2%**	-	

Therefore, 6% of CAISO's annual costs will be attributable to the RC Services.

- Annual Revenue Requirement is developed through open, transparent process
- RC Customers will have access to stakeholder meetings and Board of Governors general session meetings to weigh in on process
- Percentage allocation will be updated during triennial Cost of Service Study (next scheduled for 2021 rates)

An example of the annual allocation using the 2018 Revenue Requirement to develop the RC Services Operating Budget…

Revenue Requirement Component	**2018 Budget** **($ in millions)**
Operations & Maintenance Budget	$178.5
Debt Service	16.9
Cash Funded Capital	22.0
Other Costs and Revenues	(16.7)
Operating Costs Reserve Adjustment	(3.5)
Revenue Requirement (prior to RC Funding Requirement)	$197.2
RC Percentage Allocation from Cost of Service Study	6%
RC Operating Budget	$11.8

The RC Funding Requirement will be the sum of three components.

- RC Operating Budget
  - % of Revenue Requirement
  - % based on triennial Cost of Service Study
- RC Operating Budget Reserve
  - 2% of RC Operating Budget annually
  - Cumulative up to 10% of RC Operating Budget
  - Softening impact of regulatory fines or penalties
- RC Revenue Adjustment
  - Revenue excess or shortfall is adjusted for in the following year’s RC rate

An example of the three components of the RC Funding Requirement…

RC Funding Requirement	
Revenue Requirement (prior to RC Funding Req.)	$197.2 million
RC % (from Cost of Service Study)	6%
RC Operating Budget	$11.8 million
Plus RC Operating Budget Reserve %	2%
RC Operating Budget Reserve Amount	$0.2 million
Plus RC Revenue Adjustment	--
RC Funding Requirement	$12.0 million

The annual RC Services Rate/MWh will be determined by dividing the net RC Funding Requirement by the forecasted volumes.

- Net RC Funding Requirement will be adjusted for revenue to be collected from minimum charge
- Estimate of potential rates at various volumes:
  - $12.0 million / 450 TWh = $0.027 / MWh
  - $12.0 million / 500 TWh = $0.024 / MWh
  - $12.0 million / 550 TWh = $0.022 / MWh
- Quarterly rate adjustments if volume projections fall outside threshold (greater of 5% or $500,000)
- Initial rate setting for 2019 will be based on full year projected volumes and remain fixed

The RC Services billing data will be similar to data used by Peak RC with modifications.

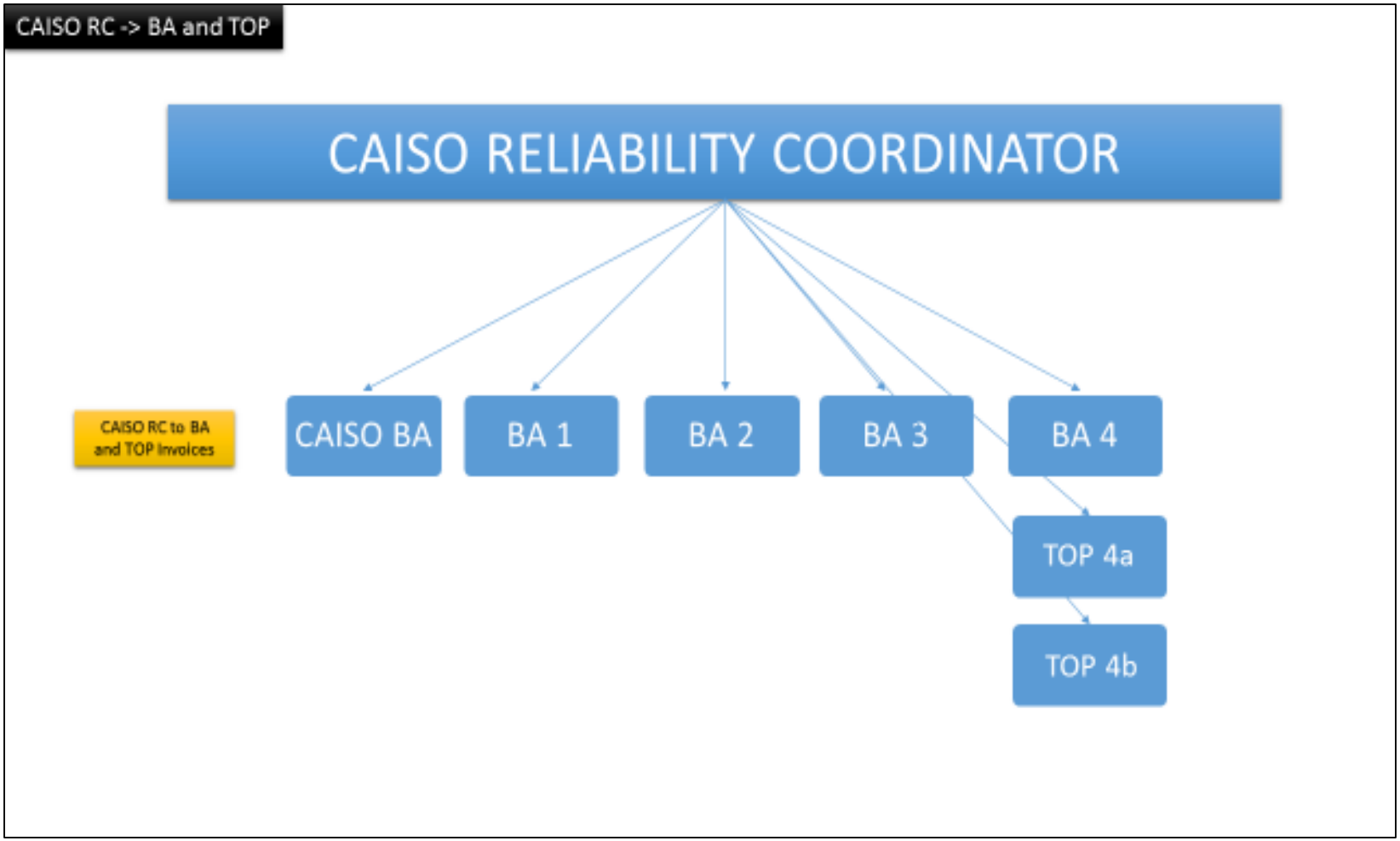
- CAISO proposes a volumetric billing determinant as well as a minimum charge for funding entities that have no to very low trackable volumes in the RC footprint
  - Net Energy for Load MWh (NEL)
    - Net BA Generation plus Imports into BA less Exports from BA less Energy for Storage
  - Net Generation MWh (NG)
    - Generation only BAs
    - Net Generation at high side of transformer
  - Minimum Charge
    - Zero to low MWh volumes
    - $5K/year or $417/month

CAISO proposes to use minimum charge for RC Customers with zero to low MWh volumes.

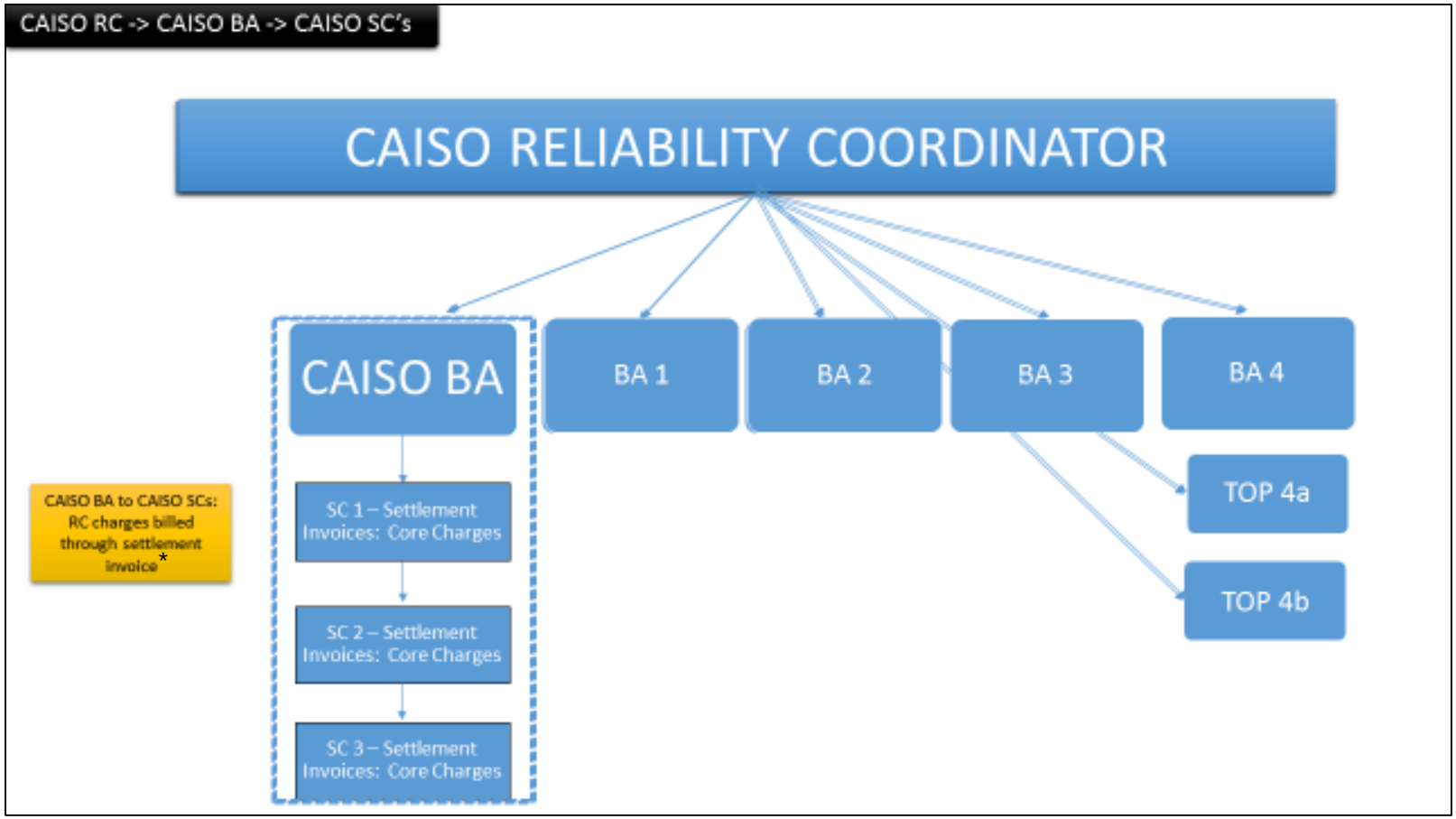
- RC Customers with zero to low MWh volumes require constant, although minimal, amount of attention. The minimum charge allows CAISO to fairly allocate cost to entities such as:
  - BA with low MWh volumes of generation only
  - TOP with transmission assets but no load
- Propose $5k annual minimum charge or $417 monthly minimum charge
  - Amount represents the projected time and resources necessary to provide outage coordination, dispatch, and other services
  - Amount to be reassessed as part of triennial Cost of Service Study

Settlement Process

CAISO proposes to invoice BAs for RC Services on a monthly basis using current NEL or NG data.



Existing CAISO Scheduling Coordinators will continue to be billed on a separate monthly invoice.



*TOPs without load will be charged the annual minimum of $5,000.

RC Customers will be required to pay their invoice by the 5th business day after the invoice is issued.

Payment default remedies:

- If payment is not received by 10th business day, a $1,000 late payment penalty will be added to the next invoice
- If payment is not received by 15th business day, all RC Customers will be notified of pending default and potential rate adjustment
- If payment is not received by 20th business day, CAISO may suspend customer's RC Services and adjust RC rate to absorb payment default and loss of billable MWh volumes

Initial Commitment and Exiting Terms

CAISO proposes an initial commitment term of 18 months.

- Ensures a reasonable recovery of costs incurred by CAISO for the initial integration and subsequent termination of service to the RC Customer

- Early termination fee applies if agreement is terminated prior to expiration of initial commitment
  - Fee will be equal to the estimate of service fees that would otherwise be due for the remainder of the initial commitment period

After completing the initial commitment, an RC Customer may terminate the agreement, without penalty, by giving six months advance written notice.

- 6 months advance written notice any time after initial commitment and prior to exit window
- 2 exit windows (spring and fall)
- Early termination fee if termination prior to 6 month required notice

Reliability Coordinator Service Agreements

CAISO will develop a draft *pro forma* Reliability Coordinator Service Agreement as part of the final draft proposal.

- Agreement obligates CAISO to provide RC Services and the RC Customer to pay for those services pursuant to the rate design, terms and conditions included in the CAISO tariff
- *Pro forma* agreement to filed with FERC; individual service agreements would be executed and recorded in FERCs electronic quarterly reports
- Agreement will consist of references to applicable CAISO tariff provisions, applicable reliability standards, and general contractual terms

Balancing Authorities will be required to enter into a Reliability Coordinator Service Agreement with the CAISO to receive RC Services.

- TOPs (provided that they are in an BA area receiving RC Services from CAISO) may elect direct billing upon their execution of the Reliability Coordinator Service Agreement
- TOPs with no load in the CAISO BA area must be represented by a Scheduling Coordinator and will be invoiced for RC Services in accordance with the CASIO tariff
  - TOPs with in the CAISO BA do not need to sign the Reliability Coordinator Service Agreement

Onboarding

Goals of the Onboarding Process

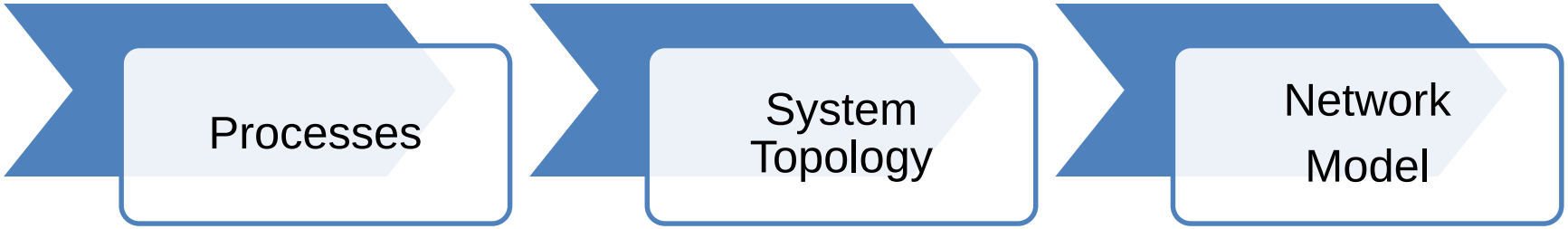
- Prepared
- Informed
- Engaged

RC Customer Onboarding

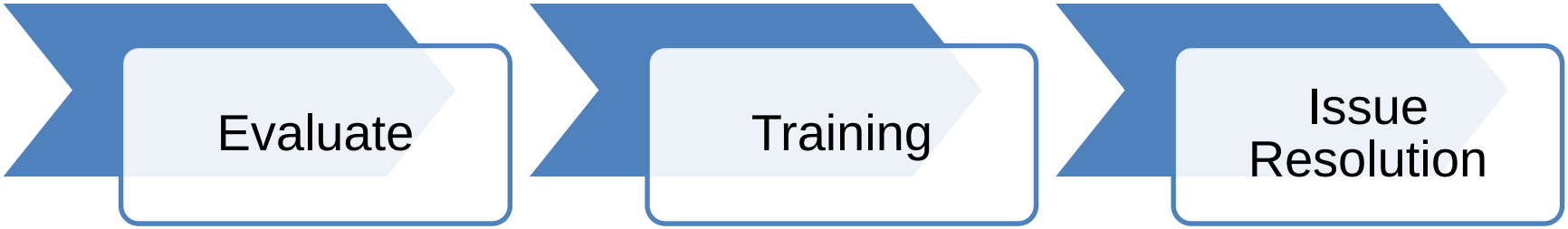
- No implementation costs for customers
- A staggered onboarding integration for RC Customers with a start date in fall 2019
- Focus on making the transition as seamless as possible
- Billings will begin once service is activated
- Future integration windows at least once a year

Dual Onboarding (6 to 12 months)

Technology



Customer Service



Other Matters

CAISO will establish an interim senior management level Reliability Coordinator Project Steering Committee (RPSC)

- The RPSC will:
  - advise, develop, review, and comment on procedures and practices relating to the CAISO's implementation and RC certification
  - provide guidance regarding ongoing oversight of the RC function
- CAISO intends to follow the direction of the RPSC with respect to overarching RC policies and procedures unless the CAISO determines that doing so would:
  - constitute an unacceptable risk to reliability, in its judgment as RC
  - be inconsistent with the reliability standards
- The RPSC will include a representative from each BA and TOP with interest in the RC membership; including the CAISO
- Letter of intent and non-disclosure agreement are required

Stakeholder Process Overview and Next Steps for Rate Design, Terms, and Conditions Initiative

ISO Stakeholder Process Overview

- All policy initiatives are vetted through an open and transparent stakeholder process
- Stakeholders or other interested parties can provide input at each stage in the process - Policy development through market simulation
- All written comments are posted on the ISO's public web site
- Public notice is issued to announce next meeting and opportunity for stakeholder input
- Issues are discussed in a public forum (stakeholder meeting, working group, call, etc.)

2018 Timeline: RC Rate Design, Terms, and Conditions Initiative

Date	Milestone
April 12	Stakeholder meeting to review straw proposal
April 26	Stakeholder written comments due on straw proposal*
May 24	Post draft final proposal
May 31	2nd stakeholder meeting to review draft final proposal
June 14	Stakeholder comments due on draft final proposal
June – July	Present draft final proposal to Board of Governors
June – July	Post draft tariff language
June – July	Stakeholder written comments due on draft tariff language
June – July	Stakeholder call to discuss tariff language and comments
August	File tariff language including agreement with FERC

*Stakeholder comments will be addressed in subsequent proposal.