Reliability Coordinator
Rate Design, Terms, and Conditions
Draft Final Proposal

Ryan Seghesio
VP, Chief Financial Officer and Treasurer

Phil Pettingill
Director, Regional Integration

Stakeholder Meeting
June 27, 2018

Agenda

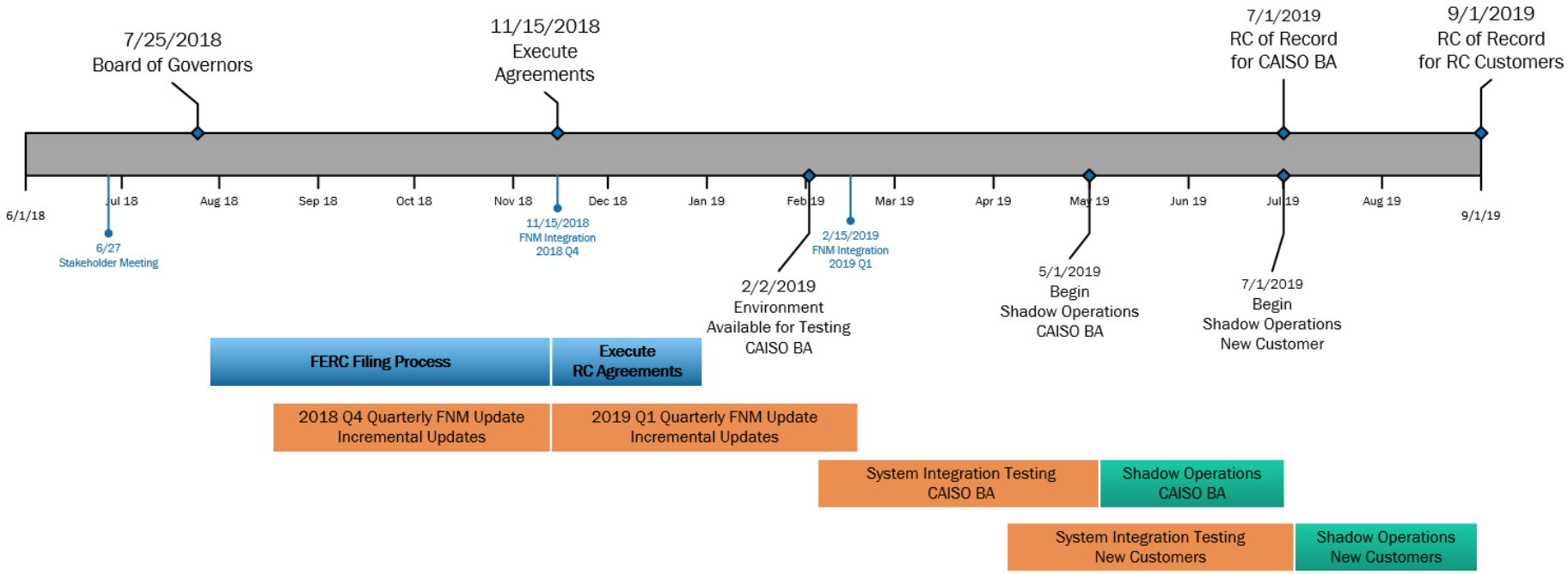
Topic	Presenter	Time
Introduction	Phil Pettingill	10:00 – 10:15 am
Project Update	Phil Pettingill	10:15 – 10:30
Scope of Services and Supplemental Services	Phil Pettingill	10:30 – 10:45
RC Funding Requirement and Rate Design	Ryan Seghesio	10:45 – 12:00 pm
Lunch Break		12:00 – 1:00
Settlements Process	Ryan Seghesio	1:00 – 1:30
Initial Commitment and Exiting Terms	Ryan Seghesio	1:30 – 1:45
Supplemental Services	Ryan Seghesio	1:45 – 2:00
Reliability Coordinator Services Tariff Framework	John Anders	2:00 – 3:00
Onboarding	Phil Pettingill	3:00 – 3:45
Next Steps	Kristina Osborne	3:45 – 4:00 pm

Project Update

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

Implementation Timeline



Scope of Services and Supplemental Services

What's changed?

- RC Scope of Services
  - Includes unscheduled flow mitigation process and tools (ECC)
  - Includes WECC Interchange Tool (WIT)

- Supplemental Services
  - Hosted Advanced Network Applications (HANA)
  - CIP-014 Assessments

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
Unscheduled Flow Mitigation Process and Tools	X	X	X	X

* Currently provided by CAISO

RC Funding Requirement and Rate Design

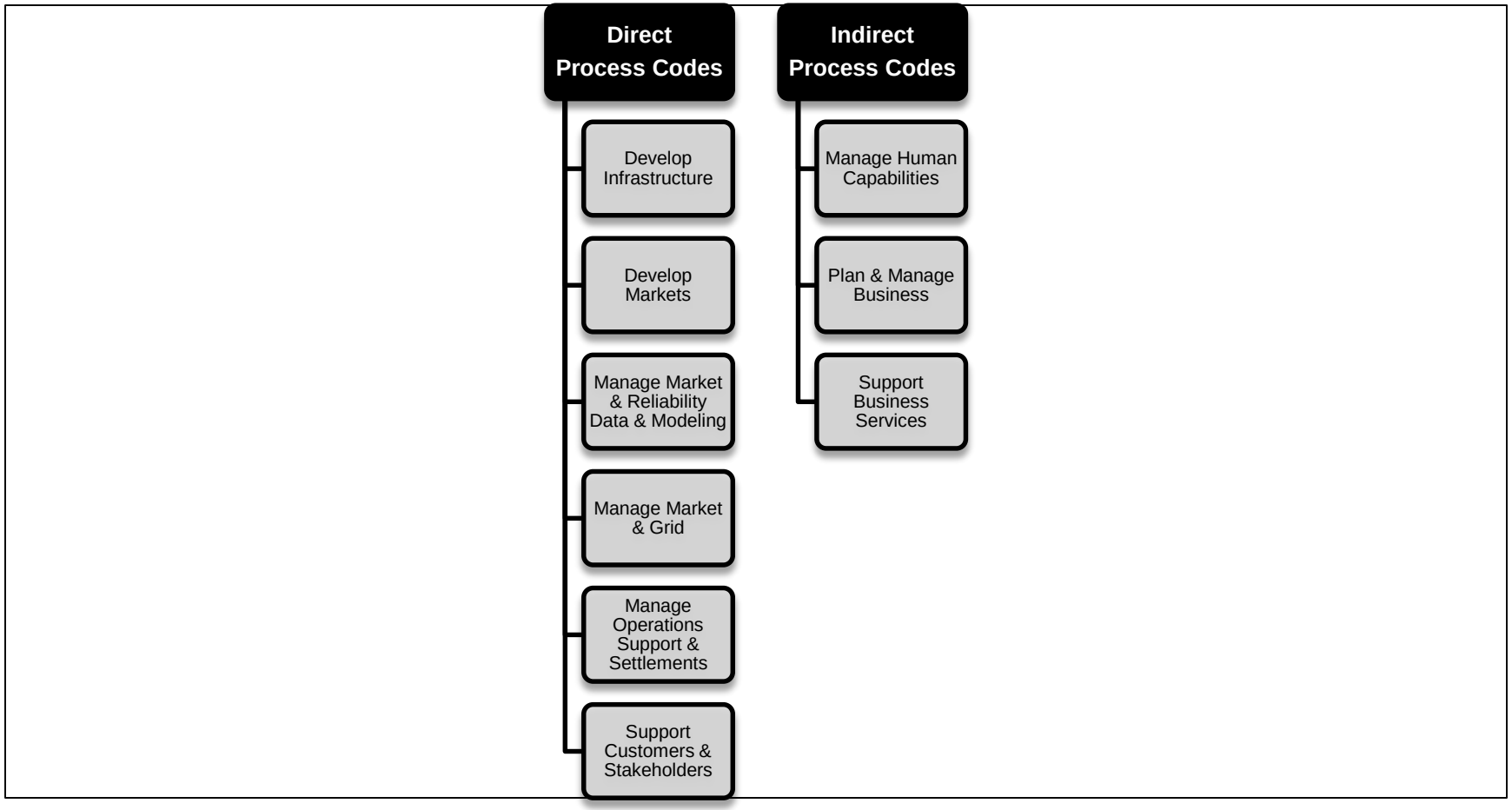
What's changed?

- Rate Design
  - New Reliability Coordinator Services cost category
  - Indirect costs allocations in sync with GMC
  - Removed Operating Budget Reserve
  - Removed Revenue Adjustment
  - Removed Quarterly Rate Adjustments

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

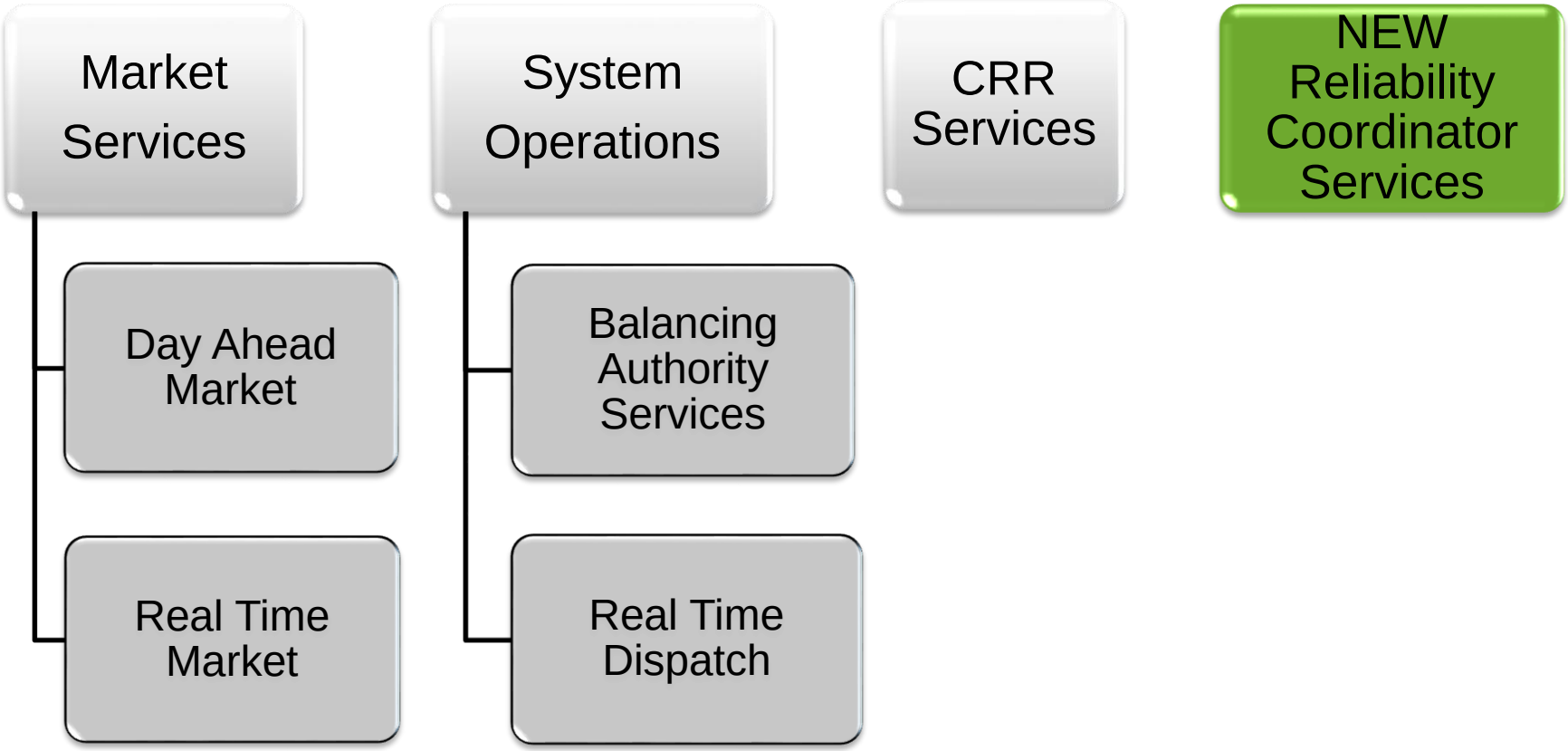
There are 9 process codes and 140 tasks used as part of the activity based costing system.



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

A new cost category will be added to capture Reliability Coordinator Service activities.



Interim Cost of Service Study calculates a total cost for RC Services of $18.5 million

Assumptions:

- RC area includes a significant portion of the western interconnection
- Revenue Requirement based on modified 2016 data

9% of the Revenue Requirement will be used to develop RC Funding Requirement.

Modified Revenue Requirement						
Component	**Budget**	**Market Services**	**System Operations**	**CRRs**	**RC Services**	**Indirect**
($$ amounts in thousands)						
Direct Costs	$ 147,347	$ 41,512	$ 64,095	$ 4,194	$ 9,781	$ 27,765
Indirect Costs	$ 15,690	$ -	$ -	$ -	$ -	$ 15,690
Non-ABC Costs	$ 29,558	$ 1,386	$ 1,485	$ 50	$ 2,055	$ 24,582
Total O&M	**$ 192,595**	**$ 42,898**	**$ 65,580**	**$ 4,244**	**$ 11,836**	**$ 68,037**
Debt Service 2013 Bonds	$ 16,900	$ -	$ -	$ -	$ -	$ 16,900
Cash Funded Capital	$ 22,000	$ -	$ -	$ -	$ -	$ 22,000
Total Debt Service and Capital	**$ 38,900**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 38,900**
Other Income (without RC Core Services Income)	$ (18,600)	$ (1,430)	$ (4,130)	$ -	$ (1,240)	$ (11,800)
Operating Cost Reserve Adj	$ (7,800)	$ -	$ -	$ -	$ -	$ (7,800)
Total Other Revenue and Operating Costs Reserve Adj	**$ (26,400)**	**$ (1,430)**	**$ (4,130)**	**$ -**	**$ (1,240)**	**$ (19,600)**
Revenue Requirement Sub-Total Before Indirect Allocations	**$ 205,095**	**$ 41,468**	**$ 61,450**	**$ 4,244**	**$ 10,596**	**$ 87,337**
Allocate Indirect Costs Based on Direct Cost %	$ -	$ 30,755	$ 45,575	$ 3,148	$ 7,859	$ (87,337)
Revenue Requirement Sub-Total Before RC Income Allocation	**$ 205,095**	**$ 72,223**	**$ 107,025**	**$ 7,392**	**$ 18,455**	**$ -**
		35%	52%	4%	9%	
Other Income: RC Core Services Income	$ (18,455)				$ (18,455)	
Total Revenue Requirement	**$ 186,641**	**$ 72,223**	**$ 107,025**	**$ 7,392**	**$ -**	**$ -**

Therefore, 9% of CAISO's annual costs will be attributable to the RC Services.

- Annual Revenue Requirement is developed through an open and 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 modified Revenue Requirement to develop the RC Services Funding Requirement…

Revenue Requirement Component	**Budget** **($ in millions)**
Operations & Maintenance Budget	$192.6
Debt Service	16.9
Cash Funded Capital	22.0
Other Costs and Revenues	(18.6)
Operating Costs Reserve Adjustment	(7.8)
Revenue Requirement (prior to RC Funding Requirement)	$205.1
RC Percentage Allocation from Cost of Service Study	9%
Other Revenue: RC Funding Requirement	(18.5)
Net Revenue Requirement (after RC Funding Requirement)	($186.6)

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:
  - $18.5 million / 450 TWh = $0.041 / MWh
  - $18.5 million / 500 TWh = $0.037 / MWh
  - $18.5 million / 550 TWh = $0.034 / MWh
- 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

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
  - 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

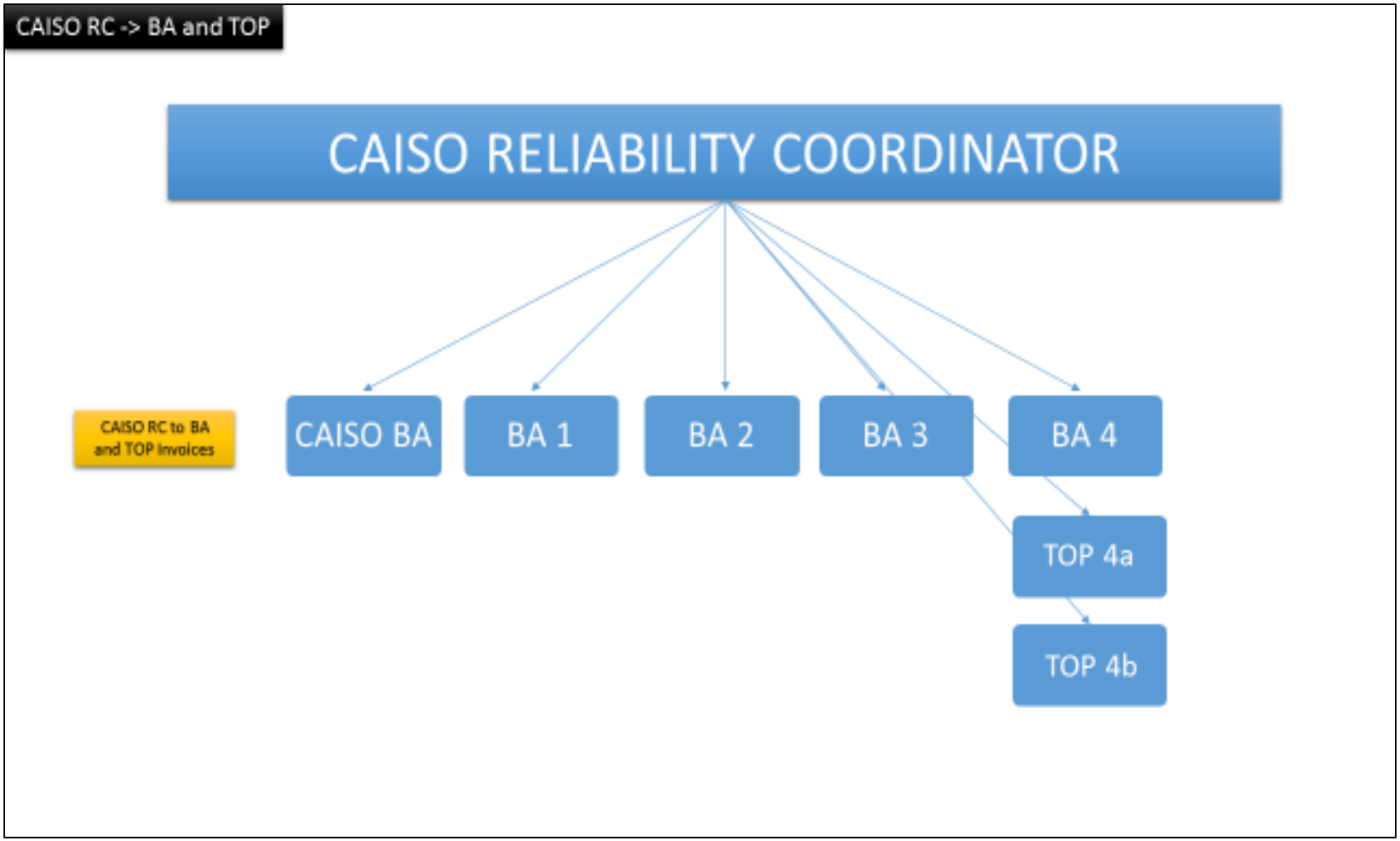
What's changed?

- Settlements
  - Annual billings
  - Default MWh volumes

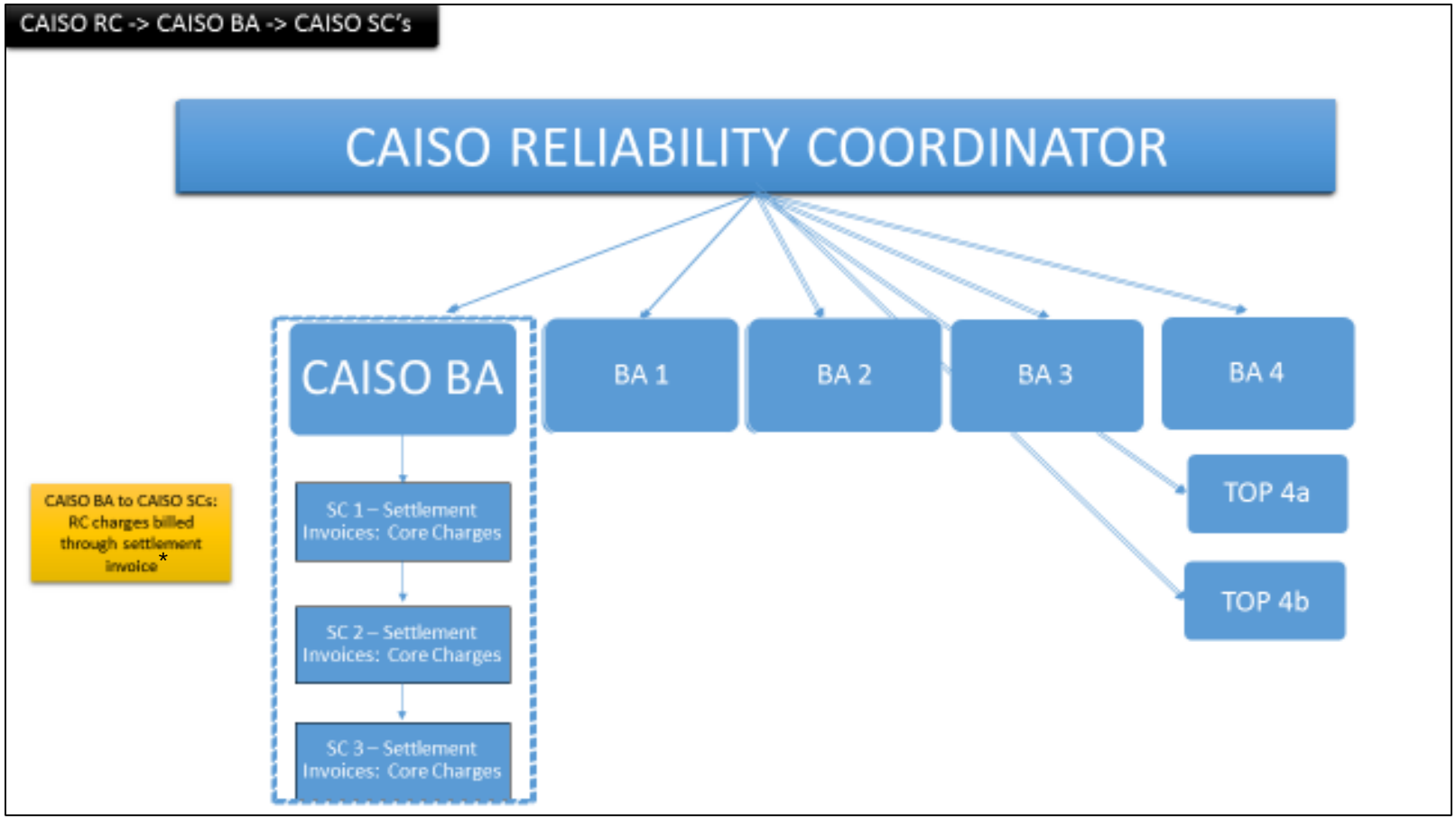
Data Submission and Billing Timeline

- Submit billing data for July 1 – June 30 through MRI-S no later than Sept. 30th
- Informational statement will be released by October 30th
- Billing data in system as of December 31st will be used to generate invoices sent January 1st

CAISO proposes to invoice BAs for RC Services on an annual basis using NEL or NG data.



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



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

RC Customers will be required to pay their invoice by January 31st.

Payment default remedies:

If payment is not received by January 31st:

- A $1,000 late payment penalty will be assessed
- All RC Customers will be notified of pending default and potential supplemental bill
- 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

What's changed?

- Initial Commitment and Exiting Terms
  - Same single annual window for onboarding and exiting (April)
  - Exit notice period extended to 12 months

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 12 months advance written notice.

- 12 months advance written notice any time after initial commitment and prior to exit window
- 1 exit window (April)
- Early termination fee if termination prior to 12 month required notice

Supplemental Services

Hosted Advanced Network Applications

- Read-only access and view to real-time:
  - State Estimator application
  - Real Time Contingency Analysis

- Use of CAISO's advanced network applications.
  - Access and ability to perform powerflow study
  - Access and ability to perform Contingency Analysis

Hosted Advanced Network Applications (estimated cost structure)

CAISO Charges

- One-Time Start-up Fee
  - $35,000 - $70,000, depending upon the number of RC Customers taking the services
  - Billed in equal installments over the initial 3-year term
- Annual Ongoing Fee
  - CAISO support: $45,000 per RC Customer.
  - Includes hardware for hosting the service, operation and maintenance, technical support, security and administrative costs

Vendor Costs

- CAISO will enter into a single agreement with vendor
  - CAISO will charge an amount equal to incurred vendor license costs
- Total is dependent on the number of RC Customers taking the services

CIP-014 Physical Security Assessments

CAISO Charges

- $50,000 Deposit and Written Request Required
  - Billed separate from RC function
  - Cost of service

Reliability Coordinator Services Tariff Framework

Elements of the RC Services Tariff Framework

- **Reliability Coordinator Services Agreement**: requires RC customers to comply with applicable provisions of the CAISO tariff
  - changes require amendment of the agreement (RCSA section 10.9)

- **CAISO Tariff**: provides the rates, terms and conditions of RC services applicable to RC customers
  - changes require board approval and FERC acceptance (tariff section 15)

- **Business Practice Manual for Reliability Coordination**: includes information for RC customers to understand how to receive RC services
  - changes require a public process (tariff section 22.11.1)

- **Operating Procedures**: establishes the procedures that the RC will follow to ensure compliance with applicable reliability standards
  - changes posted for all public procedures (tariff section 22.11.3)

Onboarding

What's changed?

- Onboarding
  - Readiness process

RC Customer Onboarding

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

Onboarding Scope

- Full Network Model Integration
- Outage Submission
- IRO-010 Data System Integration
  - Generation Unit Commitment Schedule submission (BSAP)
  - Load forecast submission (ALFS)
  - Real time network measurement data (ICCP Data)
  - Real time balancing authority data (ICCP Data)
- Training
- System Access
- RC Readiness

Onboarding Communication and Progress Tracking

Onboarding Progress Tracking Worksheet

- Tasks/Deliverables by category
- RC Customer updates & progress on collaboration site

Onboarding Checklist Overview

- Provides descriptions for each task by category
- Lists tasks by timing

Updated: XX/XX/XX					
RC Onboarding Progress Tracking				Entity BA	
Implementation Area	Timing	#		Entity	Comment
Onboarding	Before Contract	1.1	Identify Onboarding Contacts		
	Before Contract	1.2	RC Agreement Development		
	Before Contract	1.3	RC Agreement Execution		
	After Contract	1.4	Identify UAAs		
	After Contract	1.5	Provisioning		
	During System Integration	1.6	Connectivity Test		
	After Contracts,	1.7	Training		
	During System Integration Testing	1.8	System Access		
	After Contracts,	1.9	Document Readiness Criteria		
	Before System Integration Testing	1.10	Confirm Readiness		
Full Network Model	Before Contract	2.1	FNM Process and Timing introduction		
	Before Contract	2.2	Full Network Model integration for Shadow Operations		
	Before Contract	2.3	FNM Process Updates		
	Before Contract	2.4	Contingency		
	Before Contract	2.5	RAS		
	Before Contract	2.6	Transmission Limits		
	Before Contract	2.7	Voltage Limits		
	Before Contract	2.8	JOU/PseudoTie		
	Before Contract	2.9	RC BPM Updates for FNM		
	After Contract	2.10	RIMS Integration and Training		
	After Contract	2.11	FNM Data Submission through RIMS		
Outage Submission	Before Contract	3.1	Outage Submission Introduction with RC Customers		
	Before Contract	3.2	ISO Tie FNM model to Outage Model		
	Dependent on SW	3.3	ISO connect Master File to		
	After Contract	3.4	OMS training		
	After Contract, After Provisioning	3.5	ISO Deliver updated OMS Technical Specs		
	Before Contracts	3.6	RC BPM Updates for Outage Submission		
	During System Integration Testing	3.7	Outage submission testing (OMS - API, UI)		
Data Exchange Testing	During System Integration Testing	4.1	Forecast Schedule submission/gen only (BSAP)		
	During System Integration Testing	4.2	Forecast submission/load (ALFS)		
	During System Integration Testing	4.3	Settlement validation (MRIS)		
	During System Integration Testing	4.4	CMRI report access and validation		
	During System Integration Testing	4.5	HANA		
	During System Integration Testing	4.6	RC Portal		
	During System Integration Testing	4.7	Tagging		
	During System Integration Testing	4.8	WIT		
	During System Integration Testing	4.9	ECC		

Next Steps

2018 Timeline: RC Rate Design, Terms and Conditions Initiative

Date	Milestone
June 27	2nd stakeholder meeting to review draft final proposal
July 11	Stakeholder comments due on draft final proposal
July 18	Post draft tariff language
July 25	Present draft final proposal to Board of Governors
Aug 1	Stakeholder comments due on draft tariff language
Aug 8	Stakeholder call to discuss tariff language and comments
Aug 31	File tariff language (including agreement) with FERC
Early Nov	FERC ruling on RC Rate Design, Terms and Conditions
Mid – Nov	ISO will execute RC Service Agreements