



PJM SynchroPhasor Grant Update

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TOA-AC

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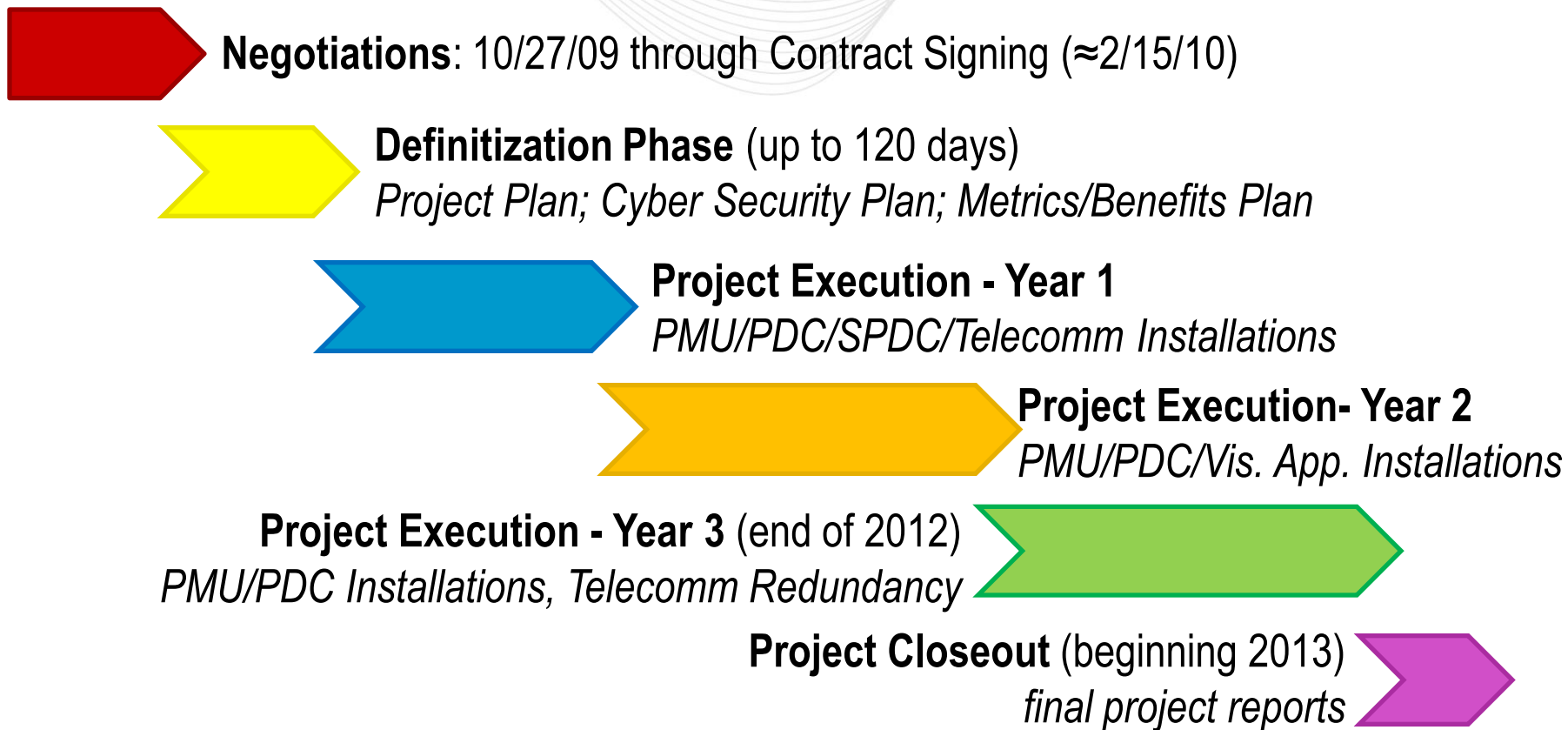
Application Strengths & Weaknesses

PROJECT : PJM Synchophasor Technology Deployment

TOTAL PROJECT COST: \$27.8m

AWARD AMOUNT: \$13.7m

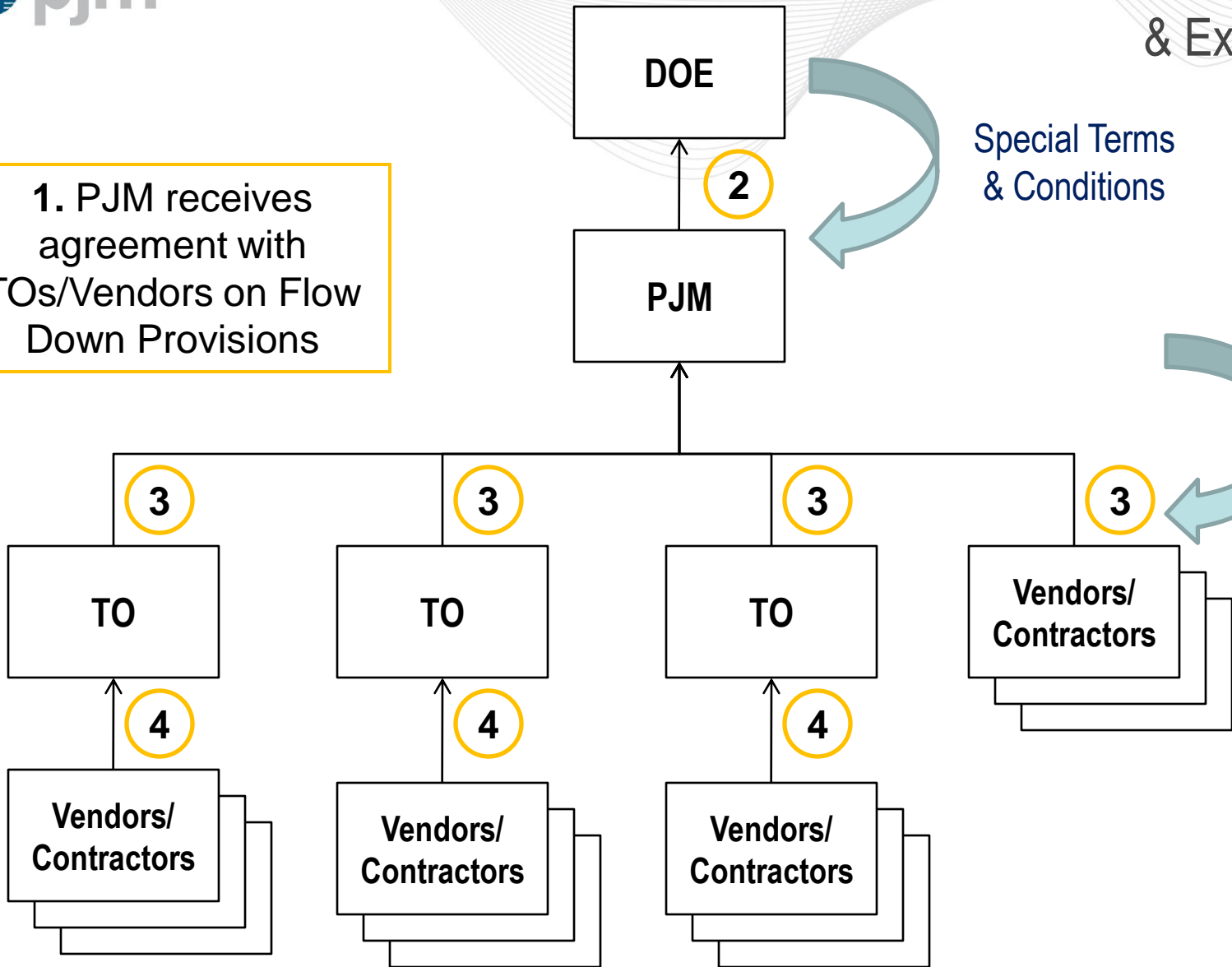
Technical Approach	Planning and Project Tasks	Interoperability	Cyber Security Protection	Data Collection and Project Costs
STRENGTHS				
<ul style="list-style-type: none"> ➤ Number of PMUs to be installed (91) ➤ Number of Transmission Owners participating (12) ➤ Number of states covered (10) ➤ Will advance the state of the art and standards for the grid 	<ul style="list-style-type: none"> ➤ Well qualified team and clear roles and responsibilities ➤ Well defined tasks ➤ Realistic schedule 	<ul style="list-style-type: none"> ➤ Project appropriately addresses interoperability ➤ Large number of providers supports interoperability and will add to better industry understanding 	<ul style="list-style-type: none"> ➤ Good plan ➤ Plan follows IEEE, NIST, and will implement a cyber security framework to meet NERC CIP requirements 	<ul style="list-style-type: none"> ➤ Excellent break down of metrics and benefits provided that are believable
WEAKNESSES				
<ul style="list-style-type: none"> ➤ Only one aspect of smart grid addressed (transmission reliability) ➤ More technical details of risks could be provided 	<ul style="list-style-type: none"> ➤ More detail on risks should have provided ➤ Letters of support from a sample template 	<ul style="list-style-type: none"> ➤ Evolving standards could introduce new risks, though team engaged in discussions 	<ul style="list-style-type: none"> ➤ Security issues related to the control of the monitored systems not addressed. OK for now 	<ul style="list-style-type: none"> ➤ No baseline of reliability established ➤ How data collected will be made available to DOE not addressed ➤ Benefits discussion could have been more extensive



Cumulative PMU Installation Schedule



1. PJM receives agreement with TOs/Vendors on Flow Down Provisions



Special Terms & Conditions

Flow Down Provisions

DOE Terms and Conditions Overview

12/24 Updated DOE Terms and Conditions

xx/xx Additional updates expected



Concern	1/12 DOE FAQ Update	Resolved?	Next Step
Property Ownership	When fair market value of property <\$5000, DOE no longer has residual interest	No	PJM intends to seek clarification from the DOE on property and encumbrance issues pursuant to 10 CFR 600.321
Davis Bacon Act	Act not applicable to public utilities when they furnish their own materials to extend their own utility system	Almost	PJM intends to seek clarification from the DOE on installation of PMUs
Tax Implications	Tax implications fall under jurisdiction of IRS, no further guidance expected	Almost	PJM recommends all subawardees discuss tax implications with company tax experts
Intellectual Property Rights	Not addressed	No	PJM to request an exemption from having to provide source code and object code.
Schedule flexibility based on force majeure events	Not addressed	No	PJM to request an article in T&Cs to allow TOs & PJM to change schedules should uncontrollable events impact schedule

- **Issue**

- PG&E designates substations where phasor measurement units (PMUs) and phasor data concentrators (PDCs) are located as critical assets (part of recent rate filing)
- FERC agreed.
 - PMUs / PDCs that feed into operational decisions should also be identified as critical
 - NERC process for self-certification flawed and looking for external review process

- **Potential Impact**

- All PMUs / PDCs and substations where these devices are located could be identified as critical assets.
- Entities that don't meet this classification may choose to not install

- **IRC Response**

- Requesting clarification that the Order was not meant to be generally applicable outside the context of the facts and circumstance specific to PG&E's Petition.
- If not provided, request rehearing as it violates Administrative Procedures Act and Federal Power Act

Definitization Phase: Period of up to 120 days after DOE contract signing to fully define project scope, execute sub-recipient/vendor contracts, and validate ability to perform.

Required Deliverables:

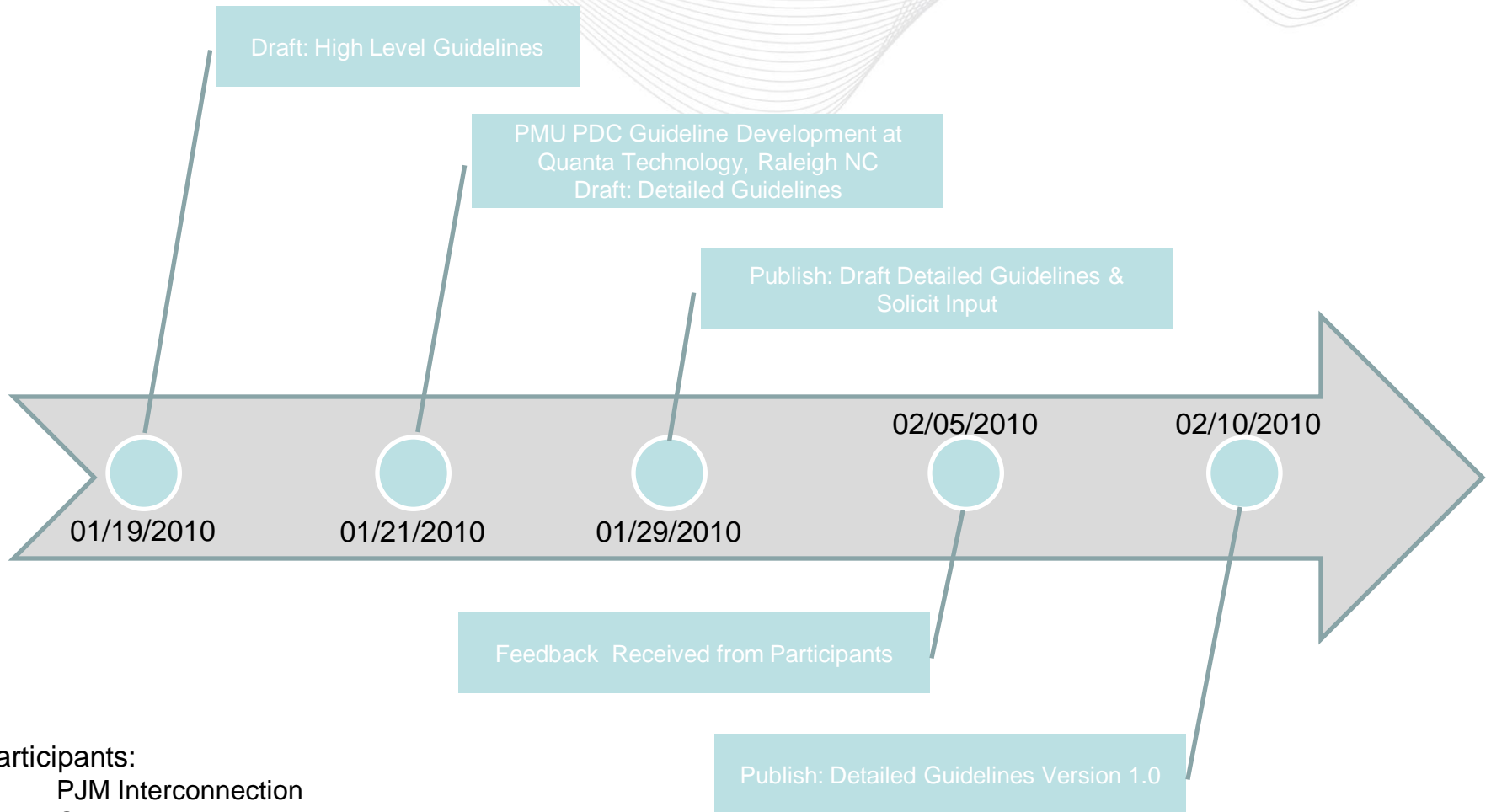
- Cyber Security Plan (30 days)
- Project Execution Plan (30/60 days)
- Metrics & Benefits Reporting Plan (60 days)

Expenses Authorized for Reimbursement:

Only expenses related to the required deliverables (above) are eligible for reimbursement during this phase. All other expenses are “at risk” until DOE has accepted the deliverables and the Definitization Phase is completed.

Agenda Topics:

- Project Team Introductions
- TO Scope Presentations
- Overview of US and Global SynchroPhasor Initiatives (Quanta)
- Lessons Learned from SynchroPhasor Implementations (EPG)
- Status of SOWs/Terms & Conditions
- Definitization Phase and Deliverables
- Reporting Requirements and Collection Process
- PMU/PDC Requirements Development
- Coordination with North American SynchroPhasor Initiative (NASPI) and Other ISO/RTOs
- Review Project Timeline and Next Steps



Participants:

PJM Interconnection
Quanta Technology
Virginia Tech University
Transmission Owners

FederalReporting.gov (ARRA)

Invoices

Labor Stats

TO

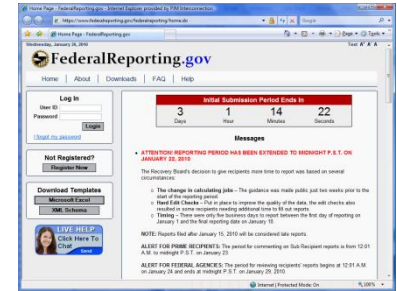
Project Status

Budget Status

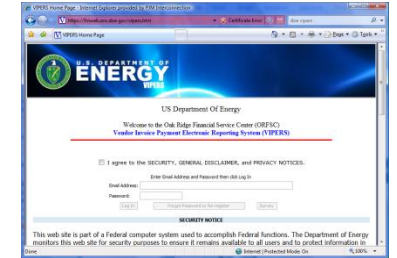
Benefits/Metrics

PJM

Calculate Overall Project /Budget Status



DOE VIPERS



DOE Grant Reporting



Supporting Slides

