

**GOVERNMENT OF PUERTO RICO
PUERTO RICO PUBLIC SERVICE REGULATORY BOARD
PUERTO RICO ENERGY BUREAU**

NEPR

Received:

Feb 5, 2021

4:13 PM

IN RE:

PROCESS FOR THE ADOPTION OF
REGULATION FOR DISTRIBUTION
RESOURCE PLANNING

CASE NO.: NEPR-MI-2019-0011

SUBJECT:

Motion submitting presentation in anticipation for
compliance hearing of February 10, 2021.

**MOTION SUBMITTING PRESENTATION IN ANTICIPATION FOR COMPLIANCE
HEARING SCHEDULED FOR FEBRUARY 10, 2021**

TO THE PUERTO RICO ENERGY BUREAU:

COME NOW, LUMA ENERGY, LLC as Management Co., per its responsibilities under the Puerto Rico Transmission and Distribution System Operation and Maintenance Agreement (OMA), **LUMA ENERGY SERVCO, LLC** (collectively, LUMA), and the **PUERTO RICO ELECTRIC POWER AUTHORITY (PREPA)** (jointly “LUMA and PREPA”), through their respective undersigned legal counsel and respectfully state and request the following:

1. In compliance with the Energy Bureau’s Resolution and Order of December 31, 2020, setting a compliance hearing for February 10, 2021, and directing that copies of the presentation to be offered on Distribution Planning and of other related documents shall be filed at least three days prior to the hearing, LUMA and PREPA hereby submit a Power Point™ presentation in pdf format on the hallmarks of the *Plan for Distribution System Interconnection Capacity Map & Power System Inventory*. **Exhibit 1.**
2. The presentation also includes matters for clarifications on portions of the descriptions of tasks included at pages 8 through 10 of the Energy Bureau’s Resolution and Order issued on December 31, 2020. **Exhibit 1.** It is respectfully submitted that the clarifications are

meant to enable LUMA and PREPA to better comply with the allotted tasks and to facilitate procedures during the compliance hearing of February 10, 2021.

WHEREFORE, LUMA and PREPA respectfully request that the Energy Bureau accept and consider this filing of the Power Point™ presentation in pdf format for the February 10, 2021, compliance hearing and deem that LUMA and PREPA timely filed the same for consideration by the Energy Bureau in preparation for the upcoming compliance hearing on Distribution Planning.

RESPECTFULLY SUBMITTED.

In San Juan, Puerto Rico, this 5th day of February 2021.

We certify that We filed this motion using the electronic filing system of the Puerto Rico Energy Bureau.

*Counsel for LUMA Energy LLC as Management Co. and
LUMA Energy ServCo LLC*

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Exhibit 1

Presentation

Plan for Distribution System Interconnection Capacity Map & Power System Inventory



Plan for Distribution System Interconnection Capacity Map & Power System Inventory

Materials submitted for presentation at
Compliance Hearing scheduled for February 10, 2021
NEPR-MI-2019-0011

2/5/2021



Agenda

- Resolution and order
- Project organization
- Order 1: Voltage level maps
- Order 2: Preliminary maps of interconnection capacity
- Order 3: Power grid inventory

Resolution and Order - NEPR-MI-2019-0011

Orders PREPA and LUMA to jointly plan the execution of the following orders:

- **Order 1. Voltage Level Maps.** Due May 31, 2021
Publishing digital maps, identified by voltage class, that show the primary distribution feeder's topology.
- **Order 2. Preliminary Maps of Interconnection Capacity.** Due Sep 30, 2021
Creating digital maps displaying the feeders' available capacity to host additional distributed generation.
- **Order 3. Power Grid Inventory.** Due Dec 31, 2021
Collecting and updating the distribution system infrastructure inventory in GIS and technical systems.



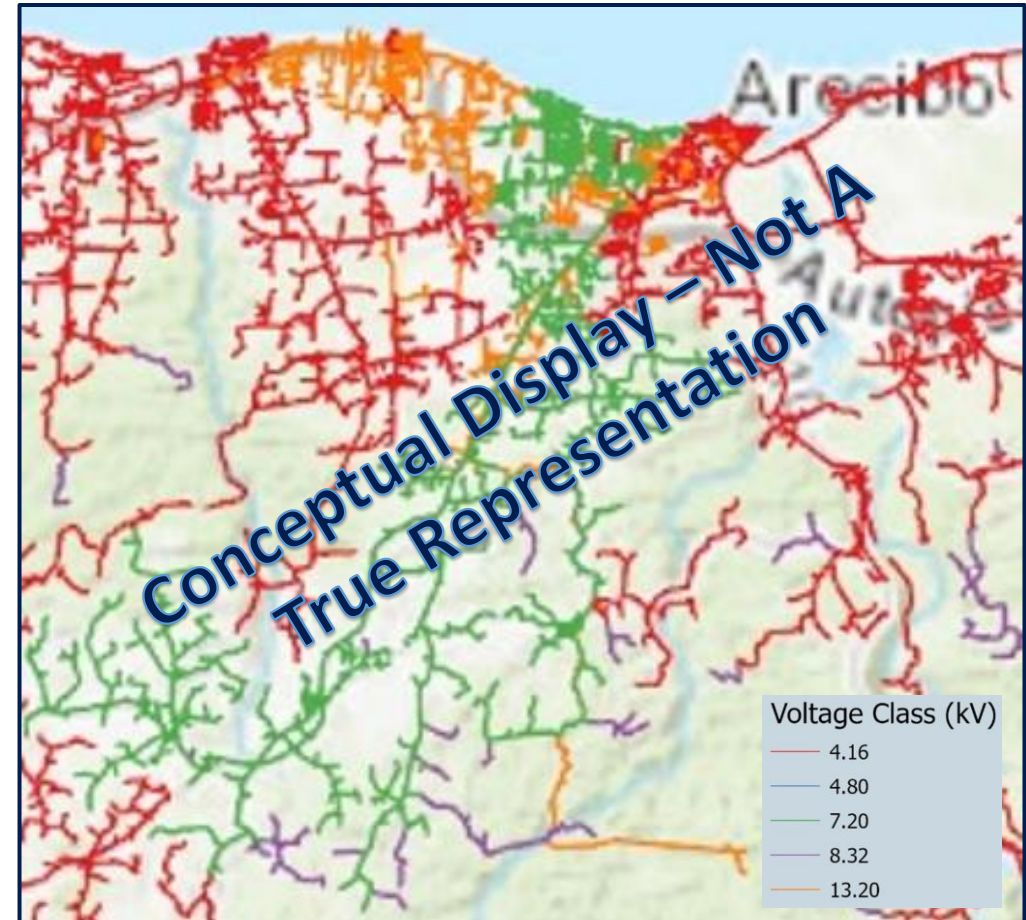
Project Organization

Order / Description	Responsible
Order 1: Voltage Level Map	PREPA
Order 2: Preliminary Maps of Interconnection Capacity	LUMA
Order 3: Power Grid Inventory	LUMA

Project Plan

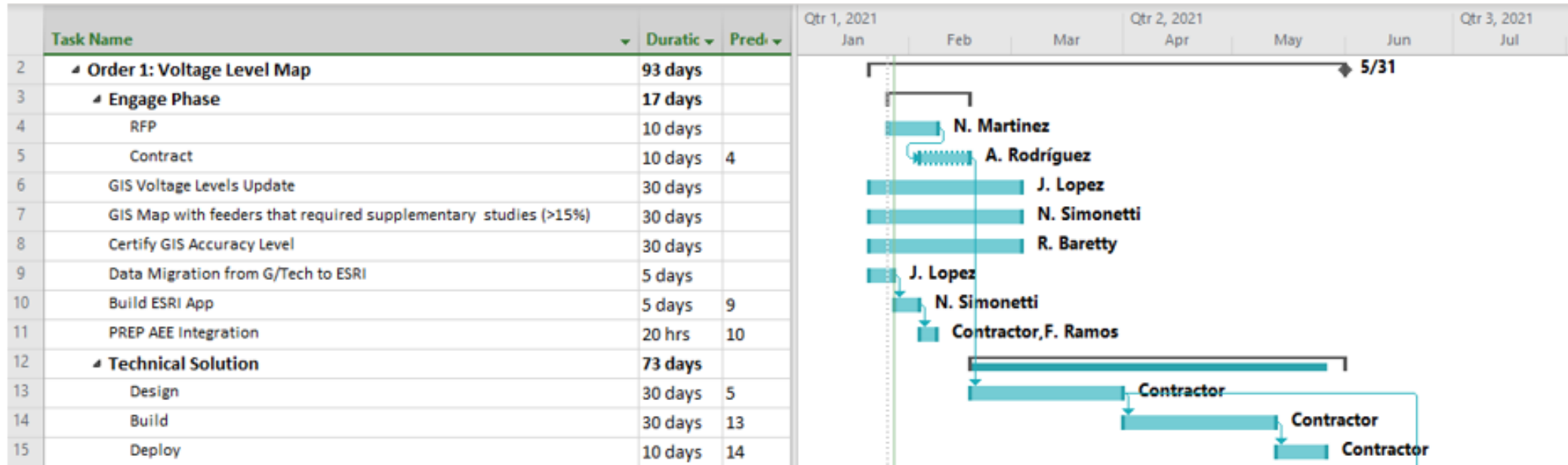
Order 1: Voltage Level Map

- Publish guiding map to be available for customers/developers displaying:
 - Feeder ID number
 - The voltage level of each feeder (4.16kV, 4.8kV, 7.2kV, 8.32kV, and 13.2kV)
 - Feeder topology able to identify street level
- Identify feeders that require supplementary studies¹



¹ Based on updated information from PREPA's list published on its website
2/5/2021

Order 1: Voltage Level Map - Schedule



Order 2: Preliminary Maps of Interconnection Capacity

A rudimentary interconnection capacity and hosting capacity will be evaluated and displayed in preliminary maps.

Rudimentary Interconnection Capacity

Data-driven analysis, comparing existing and queued DG with feeder peak load, to estimate a rudimentary interconnection capacity.

DG % Criteria	Color Code
DG < 10%	TBD
10% ≤ DG < 15%	TBD
15% ≤ DG	TBD

Hosting Capacity

Power flow modeling, simulation and hosting capacity analysis to estimate available capacity (kW) per feeder section.

Hosting Capacity	Color Code
DG < 300kW	TBD
300kW ≤ DG < 1,000kW	TBD
1,000kW ≤ DG < 3,000kW	TBD
3,000kW ≤ DG < 5,000kW	TBD
5,000kW ≤ DG	TBD

Order 2: Preliminary Maps of Interconnection Capacity (continued)

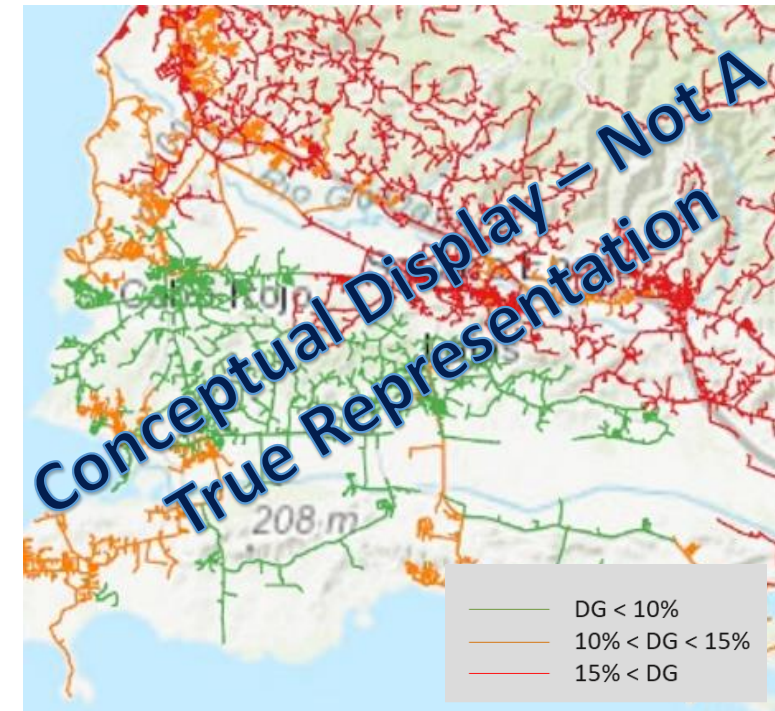
Rudimentary Interconnection Capacity

For feeders without updated or validated data (i.e., GIS, equipment, loading, DG).
(Estimated at 95% of all feeders)

Drop-down menu display

- Substation ID
- Feeder ID
- Feeder peak demand (MW)
- Feeder daytime light demand (MW)
- Aggregated existing DG (MW)
- Aggregated queued DG (MW)

Feeder Display



Order 2: Preliminary Maps of Interconnection Capacity (continued)

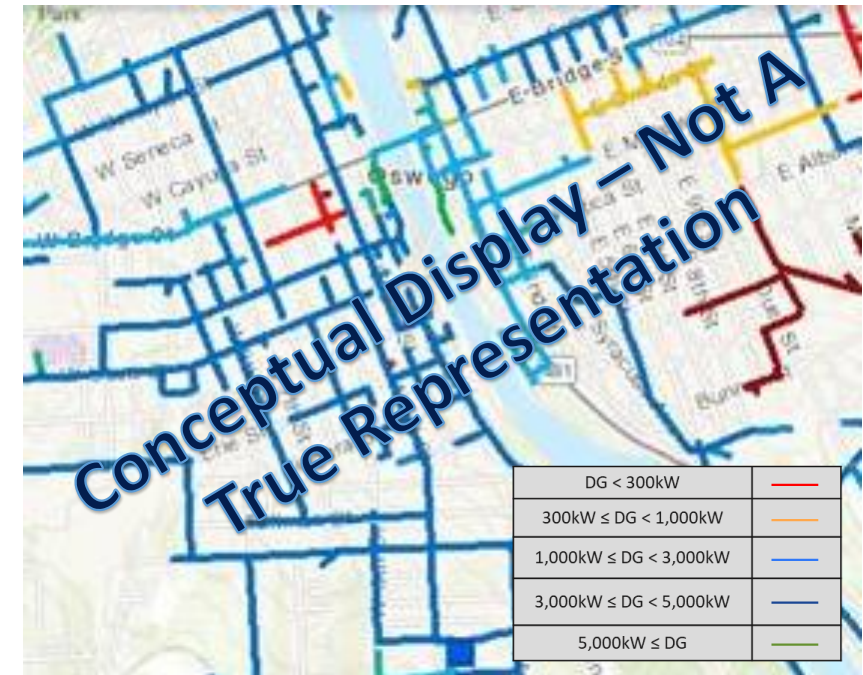
Hosting Capacity

For feeders with updated and validated GIS and technical data (i.e., GIS, equipment, loading, DG). (Estimated at 5% of all feeders)

Drop-down menu display

- Substation ID
- Feeder ID
- Feeder peak demand (MW)
- Feeder daytime light demand (MW)
- Aggregated existing DG (MW)
- Aggregated queued DG (MW)
- HC limiting factor (e.g., overvoltage, $\Delta V > 3\%$, thermal capacity, reverse power flow)
- Substation - HC limiting factor (i.e., reverse power flow)

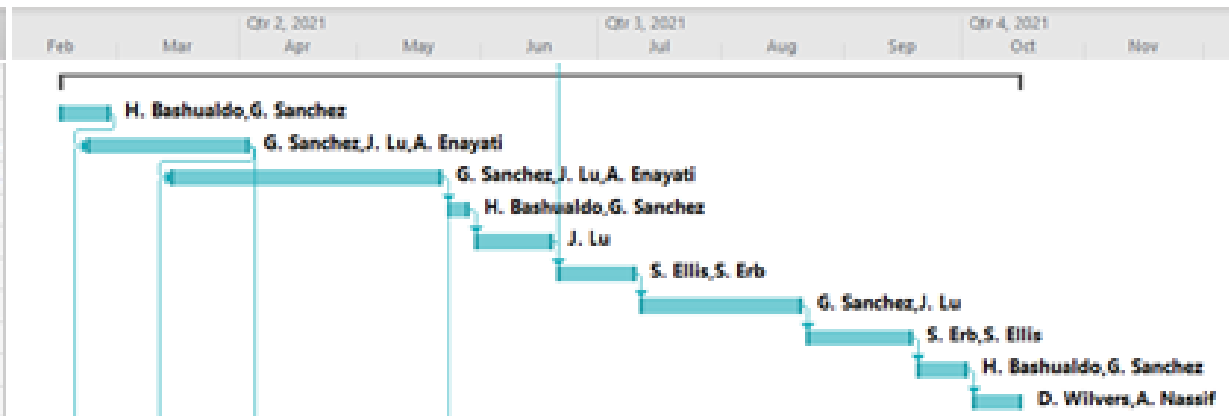
Feeder Display²



² Source: A US power utility hosting capacity portal
2/5/2021

Order 2: Preliminary Maps of Interconnection Capacity - Schedule

	Task Name	Duration	Predecessors
16	Order 2: Preliminary Maps of Interconnection Capacity (HC Maps)	175 days	
17	Interconnection Capacity criteria	10 days	
18	DG data and Process	30 days	17FS-5
19	Loading Data and Process	50 days	18FS-15
20	Mid term Project Review	5 days	19
21	Rudimentary Interconnection Capacity	15 days	20
22	Collect GIS data	15 days	21,13
23	Modeling and simulation	30 days	22
24	Update interactive maps	20 days	23
25	Report Preparation	10 days	24
26	Final Project and Report review	10 days	25



Order 2: Clarifications

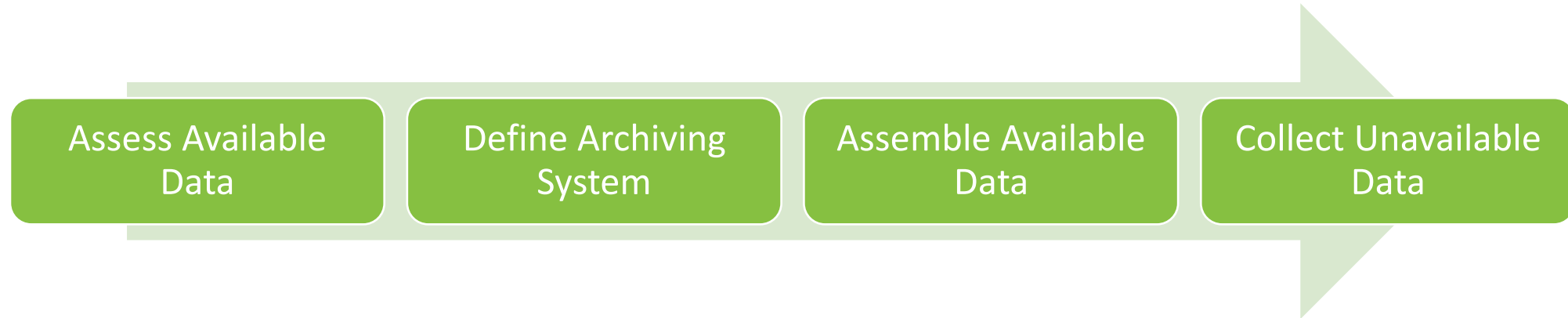
Requirement 2a:

When soliciting the information by zone, this will be done by feeder, which is in line with how this Rudimentary Interconnection Capacity and Feeder Hosting Capacity will be calculated



Order 3: Power Grid Inventory

We will approach Order 3 as 10 related sub-projects, each following this framework:



- **Assess available data:** Assess the availability of data in PREPA's existing systems.
- **Define archiving system:** Determine how the data should be stored to accomplish this order (e.g., a GIS field, a database, etc.). Create the necessary templates and frameworks.
- **Assemble available data:** For data available in existing systems, collect and input it into the selected storage method.
- **Collect unavailable data:** For data that is not available, create a plan to collect it. Where there are synergies, align with other existing data collection efforts.

Order 3: Power Grid Inventory – Details

Sub-Project	2021	2022	2023	2024	2025	2026
3.1 Circuit and Transformer Position						
3.2 Visibility of Operational Information						
3.3 Demand Profile Availability						
3.4 DER Data						
3.5 DER Profiles						
3.6 Transformer and Substation Life						
3.7 Losses						
3.8 Vulnerabilities						
3.9 Critical Loads and Supplementary Studies						
3.10 Distribution Poles						

Data Expected to be Available

- 3.2 will assess SCADA database and engineering documentation.
- 3.3 will assess Historian data.
- 3.4 and 3.9 will consolidate data from various PREPA sources, in coordination with Order 2 work.

Order 3: Power Grid Inventory – Details

Sub-Project	2021	2022	2023	2024	2025	2026
3.1 Circuit and Transformer Position						
3.2 Visibility of Operational Information						
3.3 Demand Profile Availability						
3.4 DER Data						
3.5 DER Profiles						
3.6 Transformer and Substation Life						
3.7 Losses						
3.8 Vulnerabilities						
3.9 Critical Loads and Supplementary Studies						
3.10 Distribution Poles						

Data to be Calculated

- 3.5 will be calculated per DER type, per region.
- 3.7 technical losses will initially be calculated using a rudimentary proportional method.

Order 3: Power Grid Inventory – Details

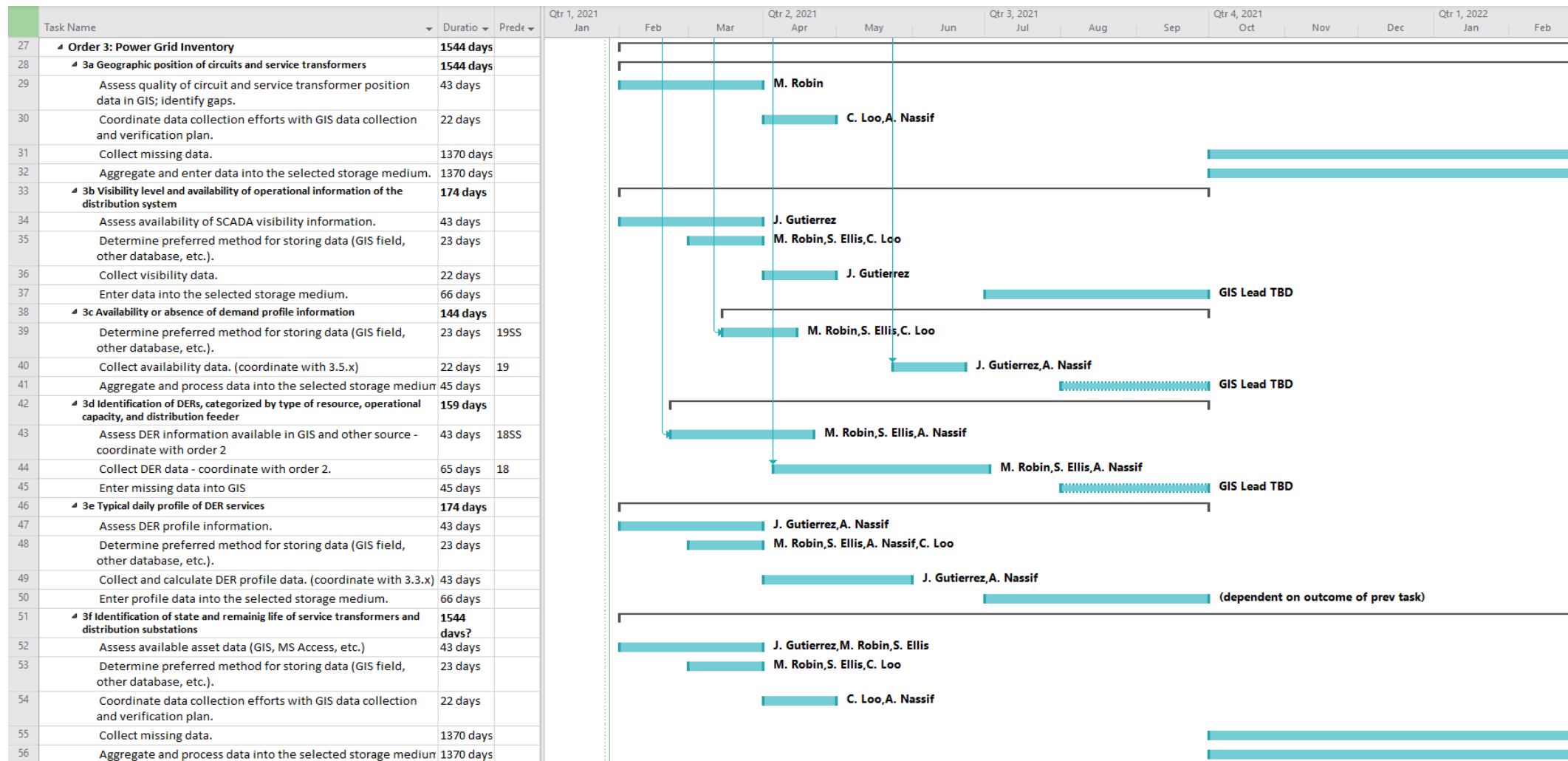
Sub-Project	2021	2022	2023	2024	2025	2026
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3.4 DER Data						
3.5 DER Profiles						
3.6 Transformer and Substation Life						
3.7 Losses						
3.8 Vulnerabilities						
3.9 Critical Loads and Supplementary Studies						
3.10 Distribution Poles						

Field Data Collection Required

- Some sub-projects represent significant data collection efforts.
- 3.1, 3.6, and 3.10 will be aligned with LUMA's 5-year GIS and line asset data collection projects.
- 3.8 will be aligned with LUMA's 4-year substation assessment project.
- Improve cost efficiencies, prevent repeat site visits.



Order 3: Power Grid Inventory – Schedule



Order 3: Power Grid Inventory – Schedule (continued)

	Task Name	Duration	Prede	Qtr 1, 2021			Qtr 2, 2021			Qtr 3, 2021			Qtr 4, 2021			Qtr 1, 2022	
				Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
57	3g Technical and non-technical losses	174 days															
58	Assess available loss information.	43 days															
59	Determine preferred method for storing data (GIS field, other database, etc.).	10 days															
60	Calculate losses.	43 days															
61	Process loss data into the selected storage medium.	45 days															
62	3h Physical and cyber vulnerabilities of distribution substations	1283 days															
63	Assess available vulnerability information.	43 days															
64	Determine preferred method for storing data (GIS field, other database, etc.).	23 days															
65	Develop vulnerability assessment processes.	22 days															
66	Coordinate data collection efforts with substation inspection plan.	22 days															
67	Collect vulnerability data.	1109 days															
68	Enter data into the selected storage medium.	1109 days															
69	3i Critical loads, priority loads, and candidates for supplementary interconnection studies	174 days															
70	Assess available critical and priority load information.	43 days															
71	Coordinate with order 2 to identify candidates for supplementary interconnection studies.	22 days															
72	Determine preferred method for storing data (GIS field, other database, etc.).	23 days															
73	Collect and aggregate load and study candidate information.	22 days															
74	Enter load and study information into the selected storage medium.	45 days															
75	3j Location, state, and joint use of each distribution pole.	1544 days															
76	Assess quality of pole data in GIS; identify gaps.	43 days															
77	Coordinate data collection efforts with GIS data collection and verification plan.	22 days															
78	Collect missing data.	1370 days															
79	Aggregate and process data into the selected storage medium.	1370 days															

Order 3: Clarifications

Deliverables

- Some data will be considered confidential, based on rules on protection of information on critical infrastructure. We do not expect to publish information that could communicate security vulnerabilities.
- LUMA does not plan to store some data types in GIS, according to industry best practice.

Requirements

- 3b: We will identify which distribution devices have SCADA visibility. For example, distribution devices modeled in GIS would have a field called “SCADA Visibility”, with options being “Yes” and “No”, or possibly “Full Visibility”, “Status Only”, “Analog Telemetry Only”, and “No”.
- 3c: We will identify where demand profile information is available. For example, for each feeder, we identify that yes, demand profile information is available, or no, demand profile information is not available.



Order 3: Clarifications

Requirements (*cont'd*)

- 3e: We will use hourly resolution for demand profile.
- 3f: “Service transformer” refers to the transformers that directly serve homes and businesses. For example, 120 V transformers.
- 3f: The “status” will be the age of the transformer when known.
- 3h: Please explain how these relate with the confidential Physical and Data Security dockets (NEPR-MI-2020-0017 and NEPR-MI-2020-0018)?

LUMA will commence work on February 15, 2021, according to its work plan, unless otherwise specified.



Project Status

Order 1

- PREPA update

Orders 2 and 3

- Planned start date: February 15, 2021
- Resources are being secured to start the work



Thank you

2/5/2021

