



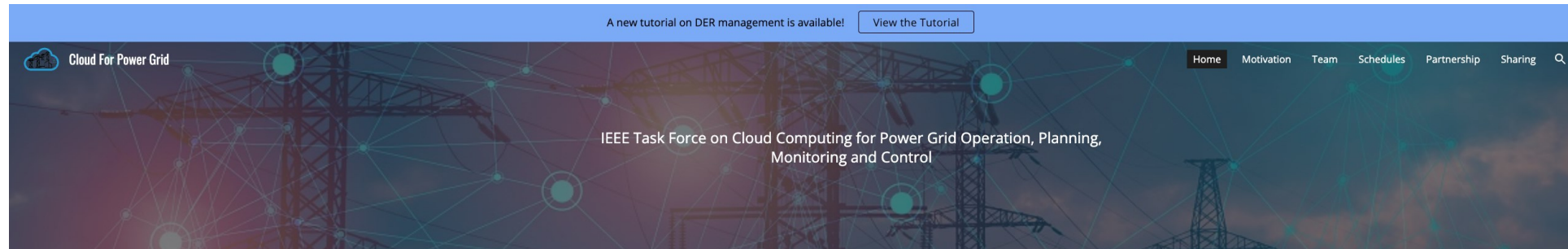
# Task Force “Cloud4PowerGrid” Is Now A Working Group

Prepared by TF Core Team

# About TF “Cloud4PowerGrid”

## A little history

<https://sites.google.com/view/cloud4powergrid>



- Motivated by FERC technical conference in June 2019 and NOI in February 2020
- Founded in March 2020
- Founding members had leadership in business-driven cloud adoption for the industry
- Aim to demystify and democratize cloud technology and promote the use of cloud services to accelerate grid modernization

# A Peek at Accomplishments

- ✓ Published a first-of-its-kind white paper as a practical guidance on cloud adoption for the power industry
- ✓ Published a comprehensive paper on IEEE Trans. Smart Grid
- ✓ Educated power system practitioners with cloud fundamentals and successful cloud applications
- ✓ Developed tutorials to engage stakeholders with hands-on labs
- ✓ Deeply involved in (and steered) multiple NERC initiatives
  - “BCSI in the cloud” implementation guidance
  - “BES Operations in the Cloud” white paper
  - 2022 EPRI-NERC-NATF Planning and Modeling Seminar

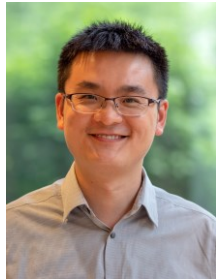


## Future Plan

- Publish the white paper in late November
- Continue to invite speakers and host webinars to share the cloud technology advancement and real-world use cases
- Provide a series of tutorials as planned to help the industry practitioners to gain insights into cloud computing and hands-on experience
- Continue to work with NERC to develop guidance for power system entities' voluntary use of cloud technology; weigh in the formation of NERC CIP standards relevant to cloud adoption (currently being silent)

# About TF “Cloud4PowerGrid”

## Core team members



**Song Zhang (Chair)**  
AWS Energy, formerly with ISO-NE



**Xiaochuan Luo (Vice Chair)**  
ISO New England



**Amritanshu Pandey (Vice Chair)**  
University of Vermont



**Mike Swan (Secretary)**  
Omaha Public Power District



**Lei Fan**  
University of Houston,  
formerly with Siemens



**Edgardo Luzcando**  
PIPartners, formerly with NYISO

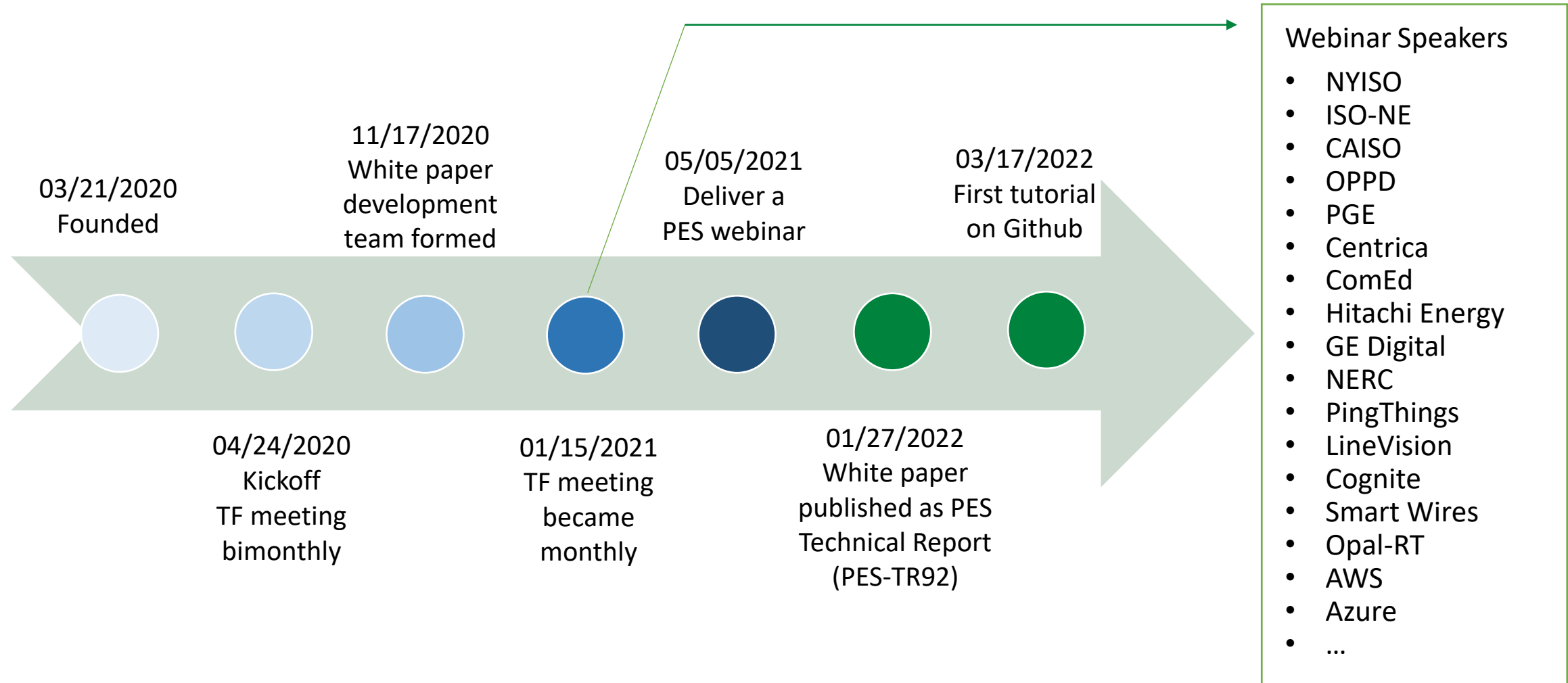


**Maggy Powell**  
AWS Security & Compliance,  
formerly with Exelon



**Abhineet Parchure**  
AWS Industry Products,  
formerly with Dominion

# Major Milestones



# Past Events

## Online Activities

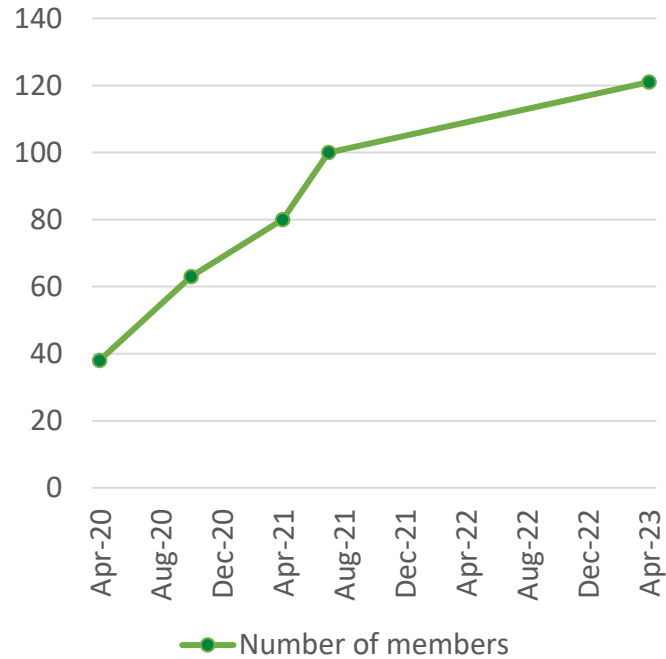
- 25 Webinars (2020.04 – 2023.05)
- 26 Presentations
- 3 Training sessions
- 2 Panel sessions
- 1 Interview session

## Offline Activities

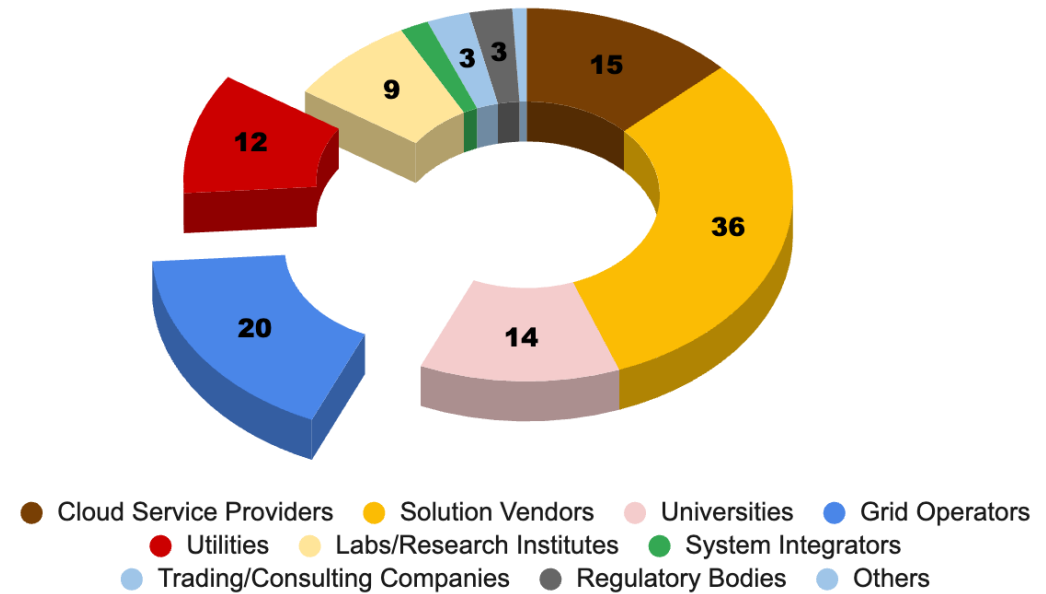
- Develop white paper/technical report
- Work with NERC in response to FERC's directive regarding cloud adoption
- Connect new cloud users to solution vendors and experienced cloud users in the industry
- Schedule one-on-one coaching sessions for new cloud users

# Member Growth & Composition

Number of members

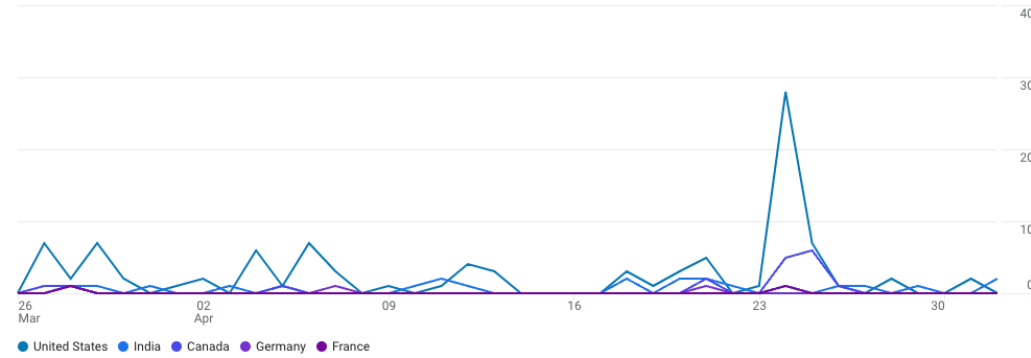


Task Force Members By Sectors

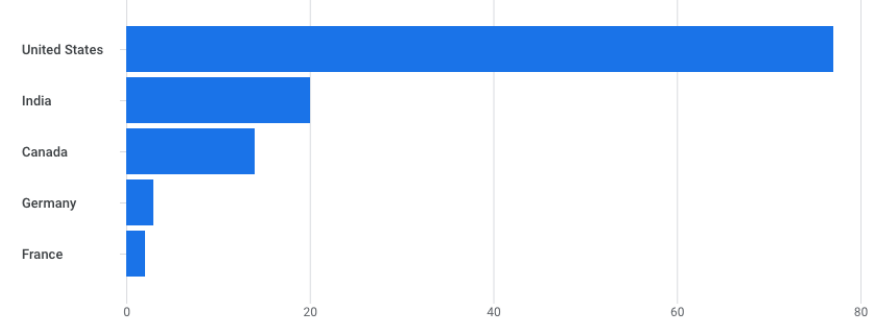


# Worldwide Influence

Users by Country over time



Users by Country



Search...

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Country	Users	New users	Engaged sessions	Engagement rate	Engaged sessions per user	Average engagement time	Event count	Conversions	Total revenue
	123 100% of total	123 100% of total	94 100% of total	42.15% Avg 0%	0.76 Avg 0%	0m 33s Avg 0%	1,074 100% of total	0.00	\$0.00
1 United States	77	77	69	44.52%	0.90	0m 42s	797	0.00	\$0.00
2 India	20	20	6	27.27%	0.30	0m 11s	95	0.00	\$0.00
3 Canada	14	14	13	41.94%	0.93	0m 30s	125	0.00	\$0.00
4 Germany	3	3	1	16.67%	0.33	0m 04s	19	0.00	\$0.00
5 France	2	1	1	50%	0.50	0m 31s	5	0.00	\$0.00
6 Netherlands	2	2	1	50%	0.50	0m 29s	9	0.00	\$0.00
7 Ethiopia	1	1	0	0%	0.00	0m 09s	5	0.00	\$0.00
8 Ireland	1	1	1	100%	1.00	0m 07s	4	0.00	\$0.00
9 Japan	1	1	1	100%	1.00	0m 31s	5	0.00	\$0.00
10 Malaysia	1	1	1	100%	1.00	0m 19s	4	0.00	\$0.00
11 South Korea	1	1	0	0%	0.00	0m 00s	3	0.00	\$0.00
12 United Kingdom	1	1	0	0%	0.00	0m 00s	3	0.00	\$0.00



# Motivation of the Conversion

- Steady growth of industry interest
  - Duke Energy, NextEra, PGE
  - NYISO, ISO-NE
  - GE, Siemens
- Energy transition requires deeper IT/OT convergence and digital innovation. Cloud is the most cost-effective way to meet the needs
- Ever-increasing DERs asks for technologies that can manage them at scale. It also calls for a new cybersecurity model to protect the grid from being invaded from the edge *#zero-trust* *#edge-to-cloud*
- Cloud is an aggregation of many disruptive technologies such as IoT, AI/ML, HPC, Block Chain and Quantum Computing.
- The Task Force has made significant impacts on the industry; however, understanding and compliance gaps still remain for the industry which slow down the grid digital transformation through the cloud
- Converting the TF to WG will create long-term commitment on keeping up with cloud technology advancement while continue to educate and promote cloud adoption in the power industry through IEEE

# New Working Group



## Cloud for Grid Modernization and Digital Transformation

# New Scope

- Continue organizing online/offline activities to bridge the gaps between the power industry and the cloud technology advancement
- Steer the development of cloud related industry standards, guidelines, and reports with various organizations such as NERC, CIGRE, EPRI and other IEEE TFs/WGs
- Create additional white papers to incorporate new use cases and reflect technology landscape
- Develop tutorials, workshops and hands-on labs that oriented to high-impact business use cases

# Join Us



# Question?

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