

Meeting Minutes

November 20, 2024

GWAC Members

Ron Bernstein, GWAC Chair and President,
RBCG, LLC

Kay Aikin, Founder, CPO, Dynamic
Grid/Introspective Systems

Andrew Bordine, Sr. Practice Manager, Grid
Automation, Actalent

Shawn Chandler, Director, Guidehouse

Marc Costa, Dir. Policy Planning, the Energy
Coalition

David Forfia, Principal Consultant, Utilicast

Lorenzo Kristov, Principal, Electric System
Policy, Structure, Market Design

Mark Ortiz, Lead Architect, Dist. Energy Sys.,
Schneider Electric

Farrokh Rahimi, Executive Vice President, Open
Access Technology International, Inc.

Aaron Snyder, Dir. of Grid Technology
Consulting, EnerNex

GWAC Associates & Emeritus

Mark Knight, GWAC Emeritus, 1898 & Company

Jeff Morris GWAC Associate, Schneider Electric

Ken Wacks, GWAC Emeritus

GWAC Guest Speaker

Alaa Mahjoub, Independent Digital Business
Advisor

GWAC Friends

Lisa Affolabi

Hani Alarian, CAISO

Larisa Dobriansky, General Microgrids, Inc.

Nicholas Domich, Pacific Gas & Electric Co.

Peter Fitzgerald, INS Engineering

Prabhu Karthikeyan, Landis +GYR

Yashar Kenarangui, Xcel Energy

Alex Papalexopoulos, ECCO International Inc.

Harry Peterson, Siloxit

Mark Siira, IEEE

Julie Stroba, INS Engineering

PNNL Support

Jaime Kolln, PNNL GWAC Administrator

Susie McGuire, GWAC Coordinator

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Ken Wacks noted that in other online meetings that he attends the rule has been that humans should be attending. Others on the call agreed with this position including Chair Ron Bernstein. Jaime will add this to the GWAC Bylaws, and it will go to a vote by the Council.

Action: add to the bylaws that attendees should be human and not AI bots.



Recording Notice

To assist with the preparation of accurate notes, the discussions at this meeting are being recorded. The recording will not be used for any other purpose than preparing meeting notes.

Jaime Kolln reviewed the fact that the GWAC meetings are recorded to benefit the preparation of meeting minutes and to capture presenter recordings if they choose to allow them to be published on the GWAC website.

Hani Alarian, CAISO, said it is his first invite to attend a GWAC meeting. Jaime noted that he is now considered a GWAC Friend and will be invited to future meetings.

Nicholas Domich, invited by Shawn Chandler, was also attending for the first time. He is with PG&E. He works in the utility partnership division. He works in Utility Partnerships which essentially is aligning the internal people towards a common goal and also aligning with external contacts on potential projects, products and solutions and working towards resolving common industry problems and challenges.

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Agenda

Call to Order and Roll Call

- Welcome

GWAC Administrative Business

- Minutes
- Upcoming events
- GWAC Accomplishments
- Action Items

Guest Speaker – Alaa Mahjoub, Advisor, UAE : Digital Grids as a Cyber-Physical System in Smart City Environments

Future Activities

- Call for Council Members is open
- GWAC Strategic Outreach Plan
- AHR Expo
- Planning 2025 GWAC Tutorials

Work Product Status Reports

- Working Party Status Update
 - Next Big Thing Slide Deck
 - Grid Future State White Paper
 - Grid Arch for Regulators White Paper
 - Applying Grid Architecture Concepts to Bridge Back from the Future Grid
 - Grid Architecture Concept Model for Transportation Electrification
- Liaison Reports

New Business

Jaime Kolln reviewed the GWAC agenda for the November meeting. He noted that both the September and October GWAC meeting minutes will be reviewed and approved today.

David Forfia gave a motion to approve the September 2024 meeting minutes as amended. Ron Bernstein seconded the motion. There were no objections and the minutes for September were approved.

David Forfia then gave a motion to approve the October meeting minutes as amended. Ron Bernstein seconded the motion. There were no objections, and the October meeting minutes were approved.

Chair Bernstein expressed his appreciation of the meeting minutes compiled and edited by Susie McGuire.

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Conferences and Events

Date	Event	Location	Attend	Speaker	Topic
Oct. 16, 2024	Smart Energy Consumer Collaborative	Reston, VA	Ken Wacks, Jeremy Roberts		
Oct. 21 – 23, 2025	V2G Business, Policy, and Technology Forum	Detroit, MI	Jaime Kolln, James Mater		Addressing Challenges, Achieving the Potential of V2G
Jan. 21 – 23, 2025	IEEE PES Grid Edge Technologies Conf	San Diego, CA	Kay Aikin, Jaime Kolln, Farrokh Rahimi		
Feb. 10 – 12, 2025	AHR Expo and ASHRAE Winter Conf	Orlando FL	Ron Bernstein	Ron Bernstein	Grid Arch/Future States GWAC/DLC Mixer proposed
Mar. 24 – 27, 2025	DistribuTECH	Dallas, TX	Forfia, Rahimi, Jaime Kolln		
Mar. 26, 2025	Smart Energy Summit	Dallas, TX	Ken Wacks		Co-located with DTECH
April 14 – 17, 2025	IEEE Energy & Policy Forum	Washington DC (?)			Formerly ISGt
July 27 – 31, 2025	IEEE PES General Meeting	Austin, TX	Farrokh Rahimi, Jaime Kolln		
Sept. 8-11, 2025	RE+	Las Vegas, NV	Jaime Kolln		GWAC Tutorial?

Jaime reviewed list of upcoming conferences and events.

Shawn Chandler will attend IEEE Grid Edge Technologies Conference and will give a presentation on 5G and 6G communication.

Action: Add Shawn Chandler as an attendee/presenter (done)

Chair Ron Bernstein asked if there are new people attending today who would like to be recognized. Ron also asked that for GWAC Friends who are participating on the calls that they provide their organization name to be included in the meeting minutes.

Action: For meeting minutes add the organization for Friends attendees if known.

Mark Siira requested to give an early Liaison presentation today. Mark is not able to stay until the end of the meeting today.

Mark Siira, IEEE, SC21 Chair, said he will present a recap of the IEEE Standards Committee 21 to GWAC and he extends an invite those on the call who are interested in participating.

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**IEEE P2030
Smart grid Interoperability
Reference Model
– IEEE 2030-2011 Revision**

Presented to GWAC

November 20, 2024

SC21 Overview

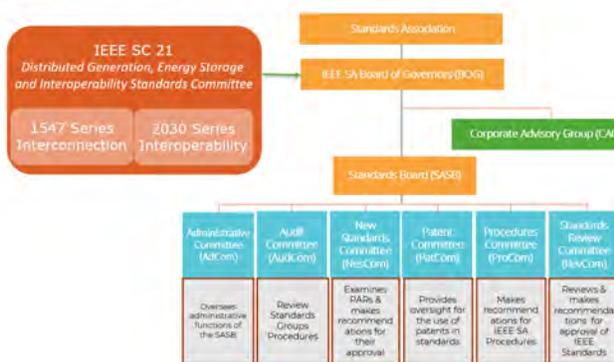


Scope: The Committee manages projects for the development of *interconnection* and *interoperability* standards for *distribution-connected energy resources*, including any kind of distributed generation, energy storage, and demand response. The Committee also reviews proposed IEEE standards in these fields before their submission to the IEEE-SA Standards Board for approval.

- Developing and maintaining IEEE standards
- Coordinating with other IEEE Societies to jointly develop and maintain standards as needed.
- Periodic reporting to the Standards and Standards Innovation (S&SI) Strategic Management and Delivery Committee (SMDC) of the IEEE-SA Board of Governors (BOG).
- Project Designator in MyProject is: BOG/SC21



IEEE STANDARDS ASSOCIATION STRUCTURE



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IEEE P2030 Project

Guide for Smart Grid Interoperability of Energy Technology and Information Technology Operation With the Electric Power System (EPS), and End-Use Applications and Loads

- **Project Scope:**
 - This document provides guidelines for smart grid interoperability and includes a knowledge base addressing terminology, characteristics, functional performance, and evaluation criteria for connectivity and communications.
 - This revision updates the information related to the seven-domain grid model, improves the application of the IEEE Smart Grid Interoperability Reference Model (SGIRM) framework based on best practices, and provides a digital model of the SGIRM.
- Project Approved through December 31, 2026



Meetings are now Monthly

- 20 Members, large number of interested parties
- Target ballot in Q3 2025
- Meetings are on Second Monday of the Month
 - 10/14
 - 11/11
 - 12/9
 - 1/13/2025

SC21 reports to the board of governors on the full standards committee.

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Status

1. Overview -80% - officers
2. References – 50% - officers
3. Definitions -75% – officers
4. SG Approach – 40% - Elizabeth and Mariana –
5. Business and Economics – 90%
6. SGIRM – 80% - Mark –
7. ICT – 0% - ?? – Outline –Power System – 50% - - Mehdi Ghazavi Dozein
8. Communications – 50% - Mariana
9. Information technology – rename? -40% - Mariana
10. Cyber security – 0% - Ben
11. Future grid – 90% - Janette -

Mark and Doug would like to make GWAC aware of this work group and invite anyone interested to participate. Doug Houseman is chair of the work group and had hoped to join today but he had a conflict. All interested are welcome to become involved, please contact Mark Siira or Doug Houseman.

Mark Siira, SC21 Chair
mark.siira@ieee.org

Doug Houseman, IEEE P2030 Chair
doug.houseman@1898andco.com

IEEE P2030 Contacts:

- Mark Siira, SC21 Chair, mark.siira@ieee.org or Doug Houseman, IEEE P2030 Chair, doug.houseman@1898andco.com
- Project Summary and signup: <https://sagroups.ieee.org/scc21/standards/ieee-std-2030-2011/>

GWAC Accomplishments

Jaime Kolln reviewed some of the GWAC publications which are available on the website and on the GWAC YouTube site.

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GWAC Accomplishments

- 2024 – [Future Electric Power Industry and Grids – Now What Again is Our Destination?](#) (NEW)
- 2024 – [A Practical Introduction to Common Grid Architecture Techniques](#) (NEW)
- 2023 – Current GWAC [Speaker Video Presentations](#)
- 2015-2022 – [Annual Transactive Energy Systems Conference](#) (since 2019, IEEE PES partnership event)
- 2022 – [Blog Post #5 – Decarbonization efforts of three Northern California CCA's](#) - Bahadur
- 2022 – [Blog Post #4 - Decarbonization of the Electric Grid](#) – Bernstein
- 2022 – [Blog Post #3 - Energy Equity in Decarbonization](#) - Negash
- 2022 – [Blog Post #2 - Grid Infrastructure Challenges In A Decarbonized World](#) – Aikin
- 2021 – [Blog Post #1 - Decarbonization – The Pattern that Has Emerged](#) - McCafferty, McCormick, Forfia
- 2020 – [Transactive Energy FAQ](#)
- 2020 – [Smart Buildings as a Transactive Energy Hub](#)
- 2020 – [Decision Maker's Interoperability Checklist v.1.6](#)
- 2020 – [Reliability and Resilience Considerations for TE Systems](#)
- 2019 - [GridWise® Transactive Energy Framework V1.1](#)
- 2018 - [TE Systems Research, Development and Deployment Roadmap](#)
- 2016 - [TE Decision Makers Checklist](#)



GWAC YouTube Channel



Action Items

- Send speaker ideas to Jaime Kolln and Ron Bernstein and copy Susie McGuire.
 - **Add an “About the Council” slide to template**
 - Make slide deck templates available to GWAC members.
- Website updates
 - Continue to add video presentations including speakers to GWAC database bureau post on the website.
 - Feedback requested on format, etc.
 - GWAC and Emeritus GWAC to review their bios from the website and update if needed.
- GWAC call for candidates
 - Jaime will be contacting GWAC members with expiring terms.

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Jaime Kolln will be modifying the GWAC presentation template to include a video link to the new GWAC Communications video and also to include the updated GWAC Mission and Vision statement. This is the template that GWAC members can use when speaking on behalf of GWAC at events and meetings.

Action: Modify the GWAC Templates to include the GWAC Communications video (all 3 videos in one) and the updated GWAC Mission & Vision Statement.

Jaime also noted that some upgrades to the GWAC website are needed, and this is being discussed internally at PNNL.

Jaime asked all GWAC Members, Associates, and Emeritus to review their photo and bio on the GWAC website. Please send any needed updates to Susie McGuire.

Action: GWAC, GWAC Associates & Emeritus are asked to update bios and photos.

Jaime Kolln introduced today's Guest Speaker: Alaa Mahjoub, Advisor in the UAE:

Speaker



Alaa Mahjoub
Independent Digital
Business Advisor

Biographies

I am an independent digital business advisor based in Abu Dhabi, UAE. I have collaborated with organizations in utilities, transportation, petroleum, and defense across multiple countries. I have led digital transformation, data management, and training programs across the UAE, Kuwait, Egypt, Malaysia, Singapore, the UK, and the US. **My work involved transforming the Digital Energy Architecture as a part of the restructuring of the water and electricity sectors in the emirate of Abu Dhabi.** I have published and reviewed for [IEEE](#), [Cigre](#), [SPE](#), and the [Arab Union of Electricity](#), focusing on operational technology, real-time operational intelligence, and digital business transformation. I hold B.Sc. and M.Sc. degrees in Computer Engineering from the Military Technical College (MTC) and Cairo University.



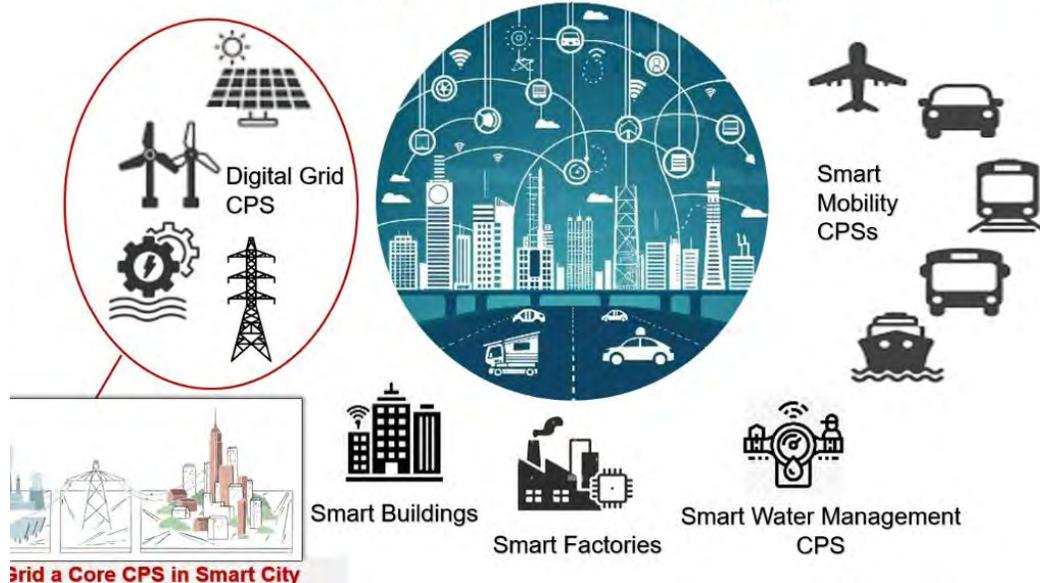
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- Digital Grid in the context of Smart Cities
- Digital Grid Vision
- Strategic Objectives
 1. Digitalization
 2. Connectivity and Interoperability (intra-sector and inter-sector)
 3. User Experience & Data-Driven Innovation
 4. Automation & Smart Operations
- Reference Architecture
- Implementation Approach
- Illustrative Examples
 1. Intra-sector Connectivity and Interoperability
 2. Inter-sector Connectivity and Interoperability
- Q & A

DIGITAL GRID IN THE CONTEXT OF SMART CITIES

Smart City's Intelligent Urban Ecosystem



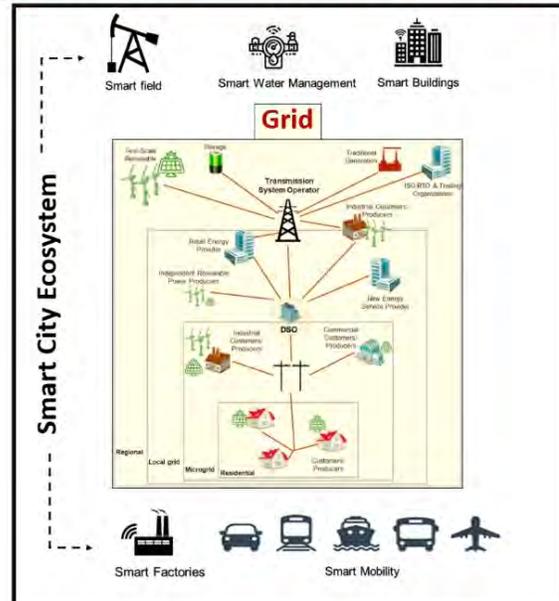
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THE VISION STATEMENT OF DIGITAL GRID

(THE ORGANIZATION'S DIGITAL AMBITION TRANSLATES INTO A DIGITAL VISION)

To establish a digital grid that can host higher volumes of renewable energy and **seamlessly interact with resources**, both generators and loads, to **deliver operational resilience** across Customers, Markets, Service Providers, Generation (including DER), Transmission, and Distribution. It will also **seamlessly interact** with other cyber-physical systems within the **smart city ecosystem**.



Adapted from Energy Strategy Reviews

External

CONNECTIVITY AND INTEROPERABILITY

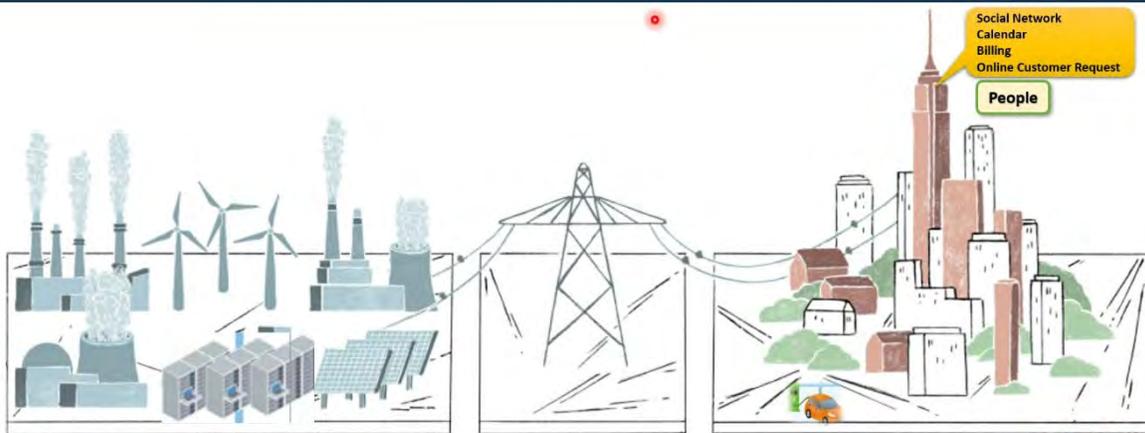
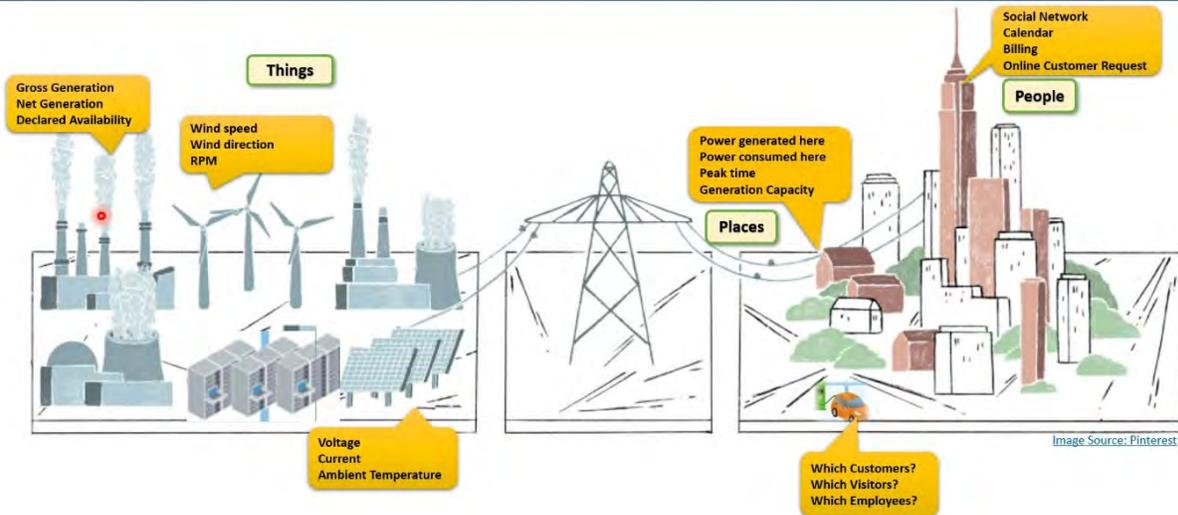


Image Source: Pinterest

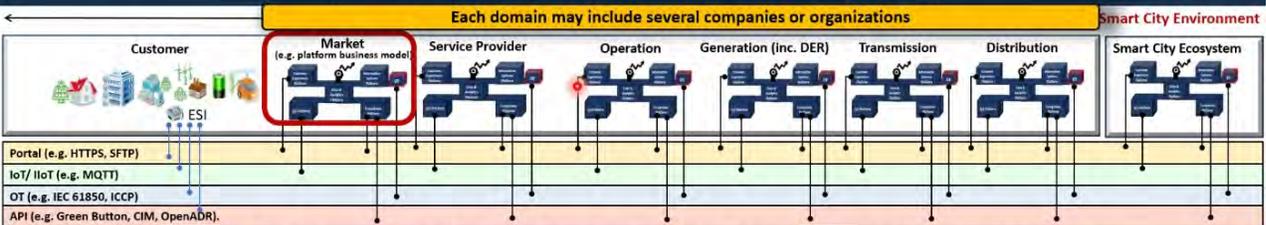
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CONNECTIVITY AND INTEROPERABILITY



INTERA-SECTOR CONNECTIVITY AND INTEROPERABILITY
(Illustrative Examples of Potential Options)



Option 1: Dedicated Digital Business Platform for Each Organization of the Electricity Sector

The digital business platform strategy will vary from company to company. For example, companies in the **market** domain may adopt a platform business model that connects market participants, such as energy producers, consumers, and aggregators, to facilitate energy trade, demand response, and value exchange through digital marketplaces.

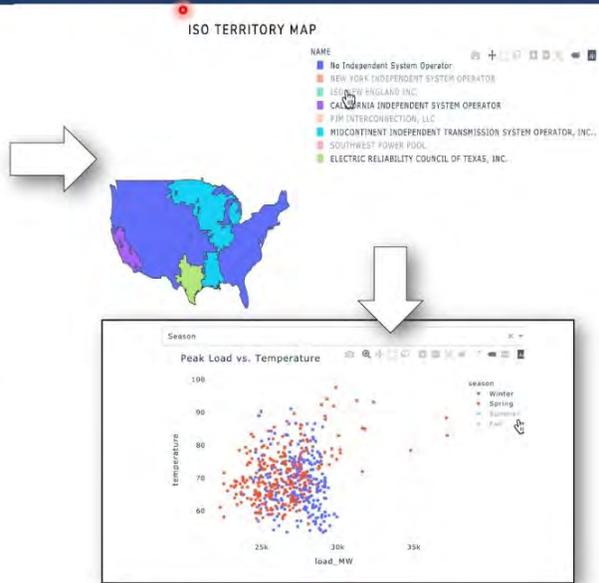
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EXAMPLE 1 : PEAK LOAD VERSUS TEMPERATURE BY LOCATION



And so, People can find out peak loads and a day ahead forecasting for independent system operators



b (External)

ILLUSTRATIVE EXAMPLE OF SEAMLESS INTERACTION OF DIGITAL GRID WITH SMART CITY ECOSYSTEM



Connected Metrorail Network (CPS)



Train (OT)

Digital Grid Seamless Interaction with Smart City Ecosystem CPSs



Smart Factories (IIoT)



Digital Grid (CPS)



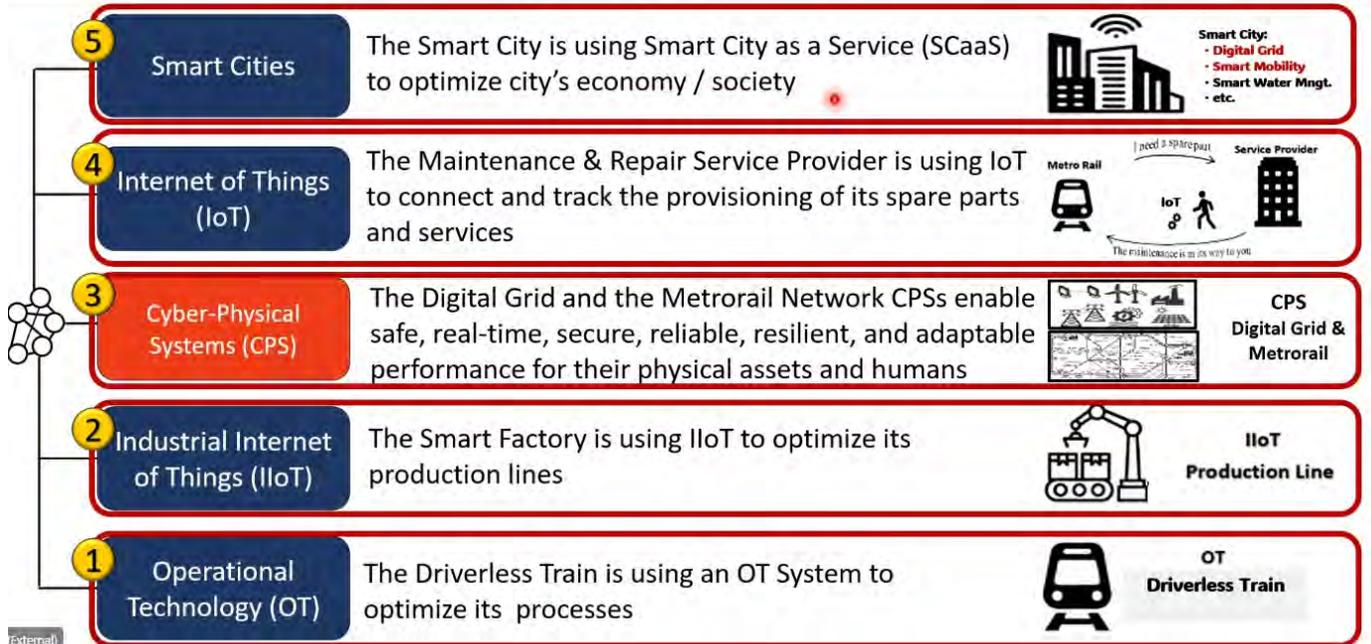
Maintenance & Repair Service Providers (IoT)

Automation & Smart Operations play a pivotal role in integrating the Digital Grid with the smart city ecosystem

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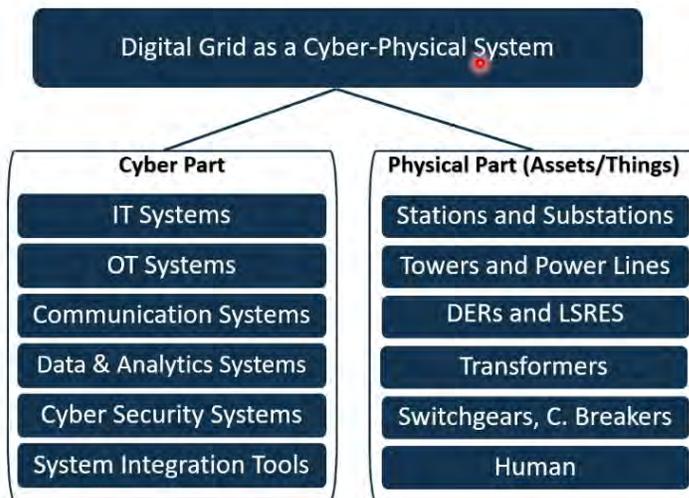
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IN THIS EXAMPLE AUTOMATION & SMART OPERATIONS IS ENABLED BY 5 UNDERLYING CONCEPTS



external

DIGITAL GRID AS A CYBER-PHYSICAL SYSTEM



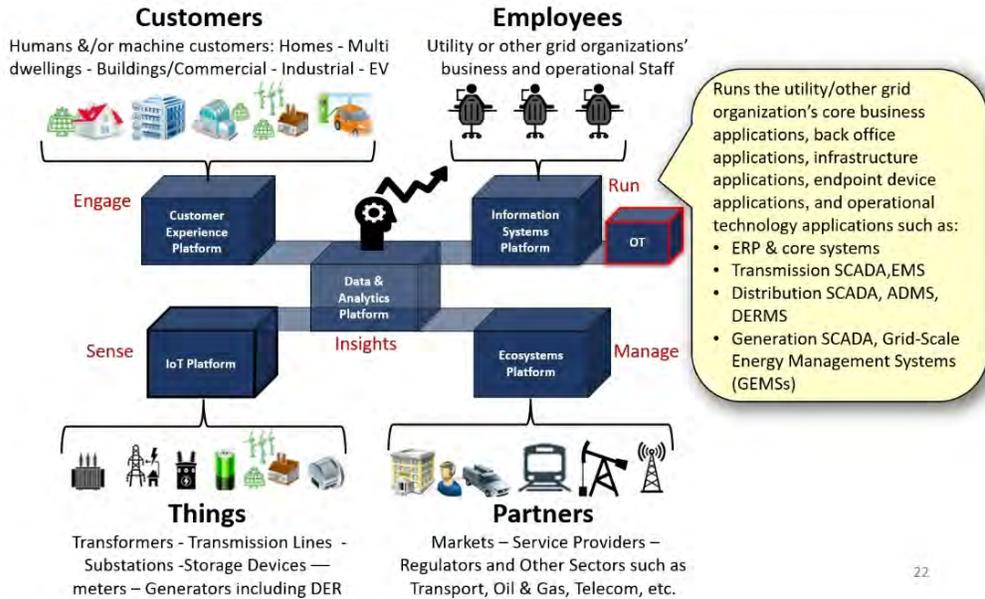
Digital Grid as a Cyber-Physical System (CPS) in a smart city environment is an engineered system that orchestrates sensing, computation, control, networking, and analytics to interact with the grid's physical assets, including humans. It enables safe, real-time, secure, reliable, resilient, and adaptable performance within the smart city's intelligent urban ecosystem.

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DIGITAL BUSINESS TECHNOLOGY PLATFORM REFERENCE ARCHITECTURE

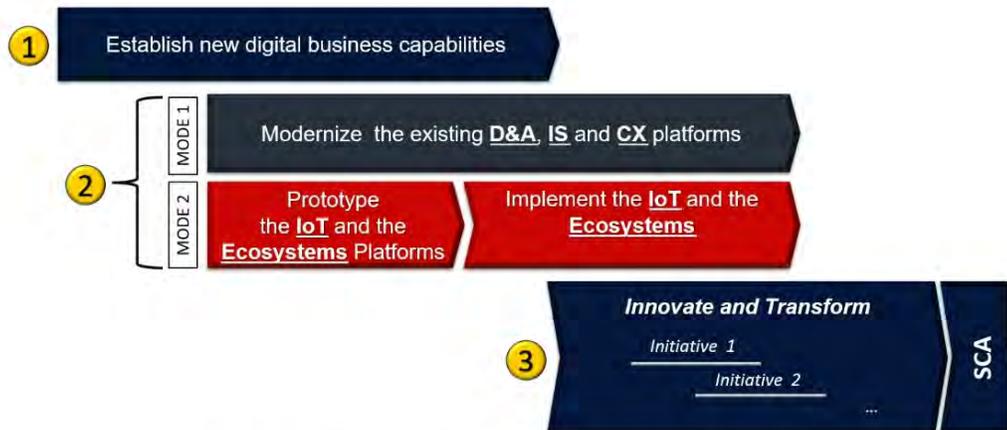
(The platform should be built on services-based principles and architecture)



terminal

22

UTILIZE A BIMODAL IT IMPLEMENTATION APPROACH TO BUILD THE DIGITAL BUSINESS TECHNOLOGY PLATFORM

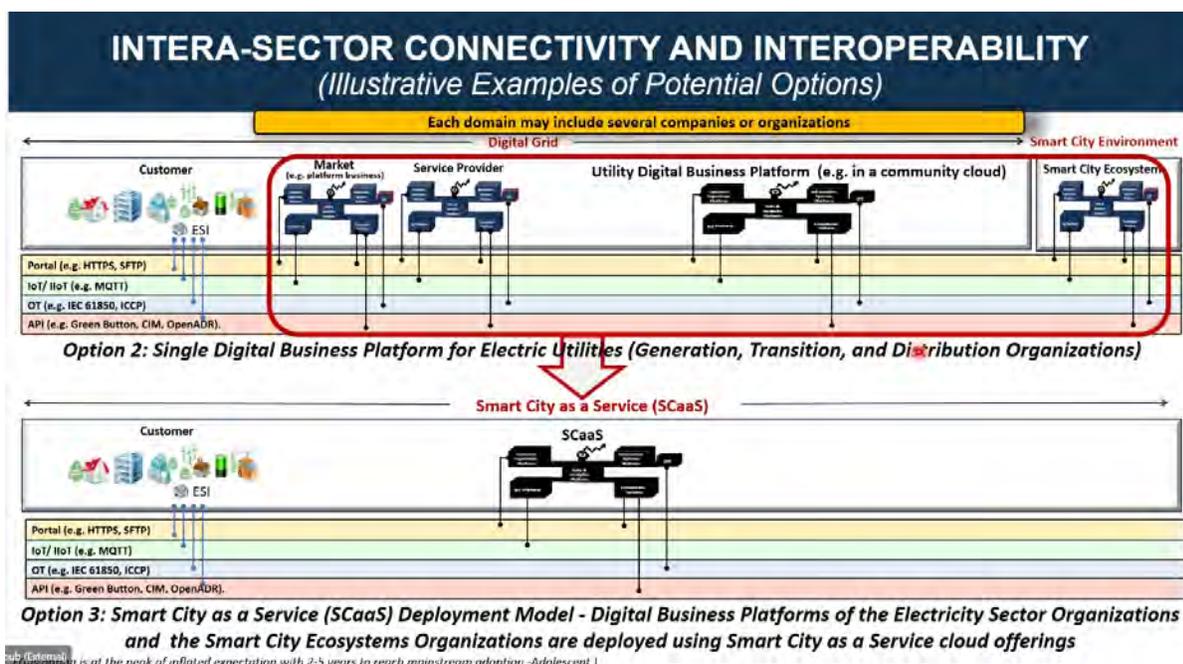


D&A = Data and Analytics IS = Information Systems
 CX = Customer Experience SCA = Sustainable Competitive Advantage

AGENDA

- Digital Grid in the context of Smart Cities
- Digital Grid Vision
- Strategic Objectives
 1. Digitalization
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- Q & A

(External)



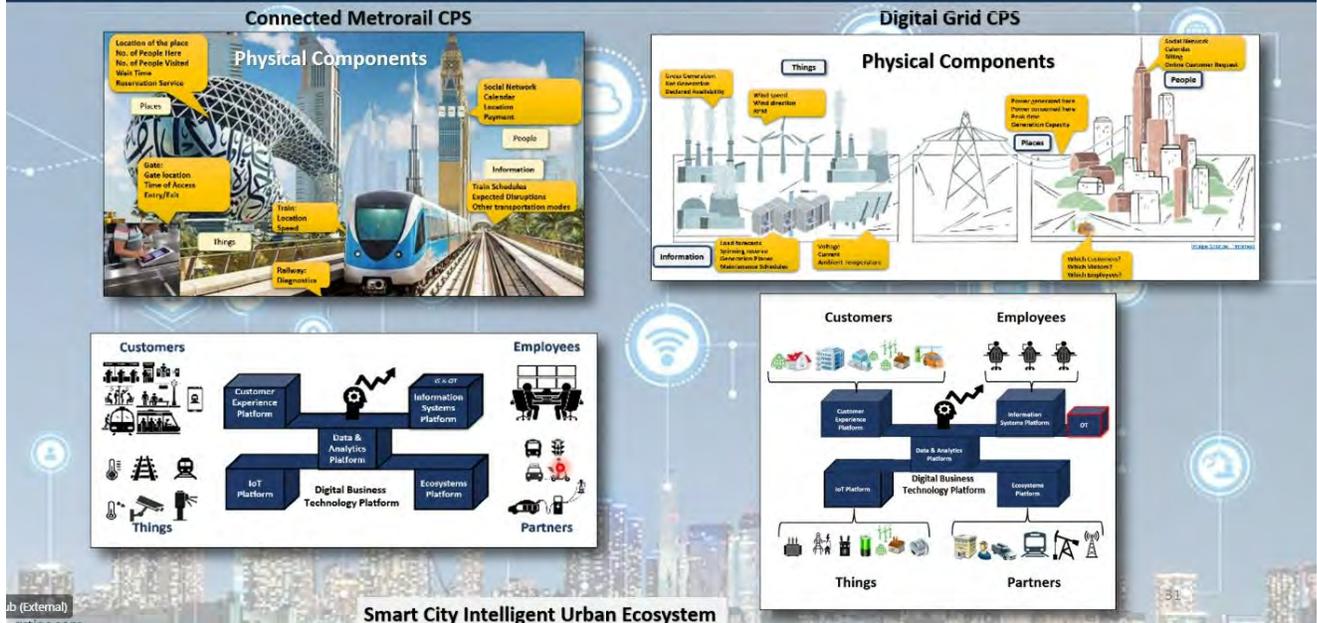
(External)

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Intra-sector Connectivity and Interoperability

Illustrative Examples: How can Digital Grid seamlessly interact with other smart city CPSs?)



Q&A

20 Novembre 2024 - Online

Speaker



Alaa Mahjoub

Independent Digital Business Advisor

THANK YOU

An independent digital business advisor. I have worked with organizations in utilities, transportation, petroleum, and defense across various countries. I have led digital transformation, data management, and training programs across the UAE, Kuwait, Egypt, Malaysia, Singapore, the UK, and the US. My work involved transforming the Digital Energy Architecture while restructuring of the water and electricity sectors in the emirate of Abu Dhabi. I have published and reviewed for IEEE, Cigre, SPE, and the Arab Union of Electricity, focusing on operational technology, real-time operational intelligence, and digital business transformation. I hold B.Sc. and M.Sc. degrees in Computer Engineering from the Military Technical College (MTC) and Cairo University.



Kay Aikin asked about a fully integrated system, she has some background in this from past experience.

Alaa said about the smart city initiative, they had some conferences about it.

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Kay asked if the cyber-physical connection was able to be made and asked about a train and a factory communicating – can the train frequency be varied to avoid congestion based on rider data?

Alaa said for interconnections there is something to connect all the initiatives together, there is a platform, APIs and data, marketplace connectivity to connect sectors. He saw something similar for fleets.

Kay said she has been out of this for ten years and she was curious to see if it is moving forward.

Alaa said it is moving forward aggressively at high speed.

Marc Costa had met some industry contacts in Abu Dhabi last year and he was impressed with how highly coordinated different groups were. He asked what the net motivation is for everyone to coordinate?

Alaa replied that the sector has already achieved three milestones. The first milestone was the transition from a vertically integrated model of ownership and control to a horizontally integrated one, which involved unbundling the sector into three subsectors (generation, transmission, and distribution) under the supervision of the Water and Electricity Authority. The second milestone was the establishment of the Emirates National Grid, which interconnected all the Emirate's electricity networks. The third milestone was the interconnection with all GCC countries. The control and information architecture has been transformed to align with these milestones. The primary motivation for coordination has been to optimize costs by improving the overall spinning reserve and enhancing network security. Now, a fourth milestone is underway: the energy transition, which began with the establishment of grid-scale renewable energy sources.

Now they are talking about the energy transition with renewables.

Jaime suggested that any remaining Q&A discussions be conducted in the chat.

Alaa will put his contact information in the chat area.

Jaime noted Susie will reach out to Alaa about putting his recording on the GWAC website.

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GRIDWISE Architecture Council

Call for Candidates Open!

Potential candidates should have demonstrated visionary capacity, team effectiveness, and an acknowledged level of recognition and credibility in their professional fields, along with specific skills and experience.



<https://gridwiseac.org/index.php/call-for-candidates/>

- Nominations are open now
- Call will close on December 15th
- At least one candidate will be chosen
- Council members serve a two-year term



https://gridwiseac.org/pdf/gridwise_architecture_council_bylaws.pdf

Jaime Kolln noted that the annual GWAC Call for Candidates is open. This is for the class of 2025-2026. Candidate information and the application is located on the GWAC website. It is expected that there will be one or two openings for the next two-year term. A certain time commitment is required as noted in the application materials.

GRIDWISE Architecture Council

GWAC "Get Involved" Video – 3rd in a series of 3



architectural principles and concepts, and provides guidelines, position statements and checklists for decision-makers.

<https://www.youtube.com/watch?v=nUrhPpSkZMo>

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Jaime asked the GWAC members to repost links to the 3 videos in their social media accounts. Jaime also asked current GWAC members to refer interested candidates to the three newly developed GWAC explainer videos that were recently published on the GWAC website.

GRIDWISE Architecture Council

GWAC Strategic Outreach Plan

- GWAC Mission and Vision Statements

Vision

The GridWise® Architecture Council supports a vision of a decarbonized, decentralized, and democratized electricity system to ensure the energy needs of today and that of future generations.

Mission

The GridWise® Architecture Council (GWAC) was formed in 2004 by the U.S. Department of Energy to propose principles for and accelerate the development and adoption of interoperability concepts and standards across all applications operating and interfacing with electric systems.

The Council's mission is to engage with stakeholders to accelerate the development and application of grid architecture concepts and principles. This leads to:

- Identification of critical paths to facilitate the effective evolution of the systems, devices, and entities that encompass the electric systems and achieve societal objectives.
 - Advancement of standards, applications, and systems interfacing with the current and future electric systems to ensure they are sustainable, reliable, resilient, efficient, extensible, and equitable.
- Guest speaker recordings continue to be developed and published to YouTube
 - Outreach through conference presentations
 - Slide deck to be developed with template and GWAC outreach slides.
 - NARUC meeting colocation?
 - Other organizations to "cross-pollinate" ideas with.
 - Identify liaison volunteers, e.g. INCOSE

Jaime said he is hoping to have a GWAC meeting that is co-located with a NARUC meeting to help us understand the needs of regulators.

Jaime invited today's attendees to add ideas for other organizations that GWAC should collaborate with.

Action: Jaime to follow up with Artis R, PNNL about an INCOSE involvement.

Chair Ron Bernstein has arranged time and meeting space at the AHR Expo for a GWAC panel presentation. It is currently planned for Feb. 10, 2025, at 4:30pm. It is an end of the day slot, and several have said they can participate. The topic is along the lines of the tutorial at RE+. The list of presenters so far are; Ron Bernstein, Jaime Kolln, Ron Ambrosio, Andy Bordine, and David Forfia.

Ron Bernstein is also setting up a meeting for the GWAC AHR attendees to meet with colleagues from the Design Lights Consortium on the evening of Feb 10. This will be an opportunity for the two groups to discuss a possible collaboration.

Action: Susie to set a meeting with the AHR panel people, 30 min to go over what will be presented (Ron B, Andy B, David F, Ron A)

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Plans are underway for the next RE+ - there will be a morning GWAC F2F meeting followed by an afternoon panel. Preliminary discussions with Aaron Smallwood have been encouraging. The next RE+ will be held in Las Vegas in September 2025.

Ron B would like to see this get organized soon and to be scaled back from this fall's GWAC Symposium.

Kay Aikin noted that she will not be able to attend RE+ in Las Vegas.



“Next Big Thing” / “Back from the Future”

- Originally presented at AHR Expo
- Ron Ambrosio and Rahul Bahadur are leading a committee to develop a webinar on "The Next Big Thing"
 - Rahul Bahadur and Ron Ambrosio Updates
- Next Steps
 - Development of a concise slide deck
 - Draft presentation will be reviewed by GWAC
 - Web Page with details including GWAC activities



Rahul Bahadur said that Ron Ambrosio is reviewing the slides developed so far and this presentation this is close to being complete.

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Grid Architecture for Regulators

- **Team members: Lorenzo Kristov, Kay Aikin, Larisa Dobriansky, Jeff Morris, Mark Paterson, Farrokh Rahimi, Chris Villarreal, Ron Bernstein**
- White paper will be aimed primarily to GWAC community:
 - Document experiences, observations & lessons learned from the use/non-use/value of Grid Architecture in policy & regulation venues
 - Provide a basis for strategies to promote Grid Architecture among policy makers
 - Paper will be a living document, starting with a few initial case studies and adding new case studies as available
- Initial case studies
 - U.S. — FERC Order 2222
 - State — Xcel Minnesota rate case; CPUC High-DER docket
 - Municipal — Portland Maine
 - International — Ontario, Canada
- Tentative target date: Draft for GWAC review by mid-November; ready for posting early 2024.

Jaime asked Lorenzo if it's time to reconvene the Grid Architecture for Regulators group. Lorenzo suggested holding a meeting after the Thanksgiving holiday and added that any things have happened in these domains in the last six months. He will invite people including Jaime to go over what they have and how they can proceed to complete this paper. Jaime offered some help in getting new participants and suggested that Matt McDonald might want to be involved. Lorenzo said he follow up with Matt. Jamie added that he thought there was a new connection regarding his new work.

Jaime has some PNNL contacts that may be able to help and are familiar with policies. They may be able to provide some help and insight. Jereme Twitchell, PNNL would be one person that Jaime is thinking of. A conversation might lead to something.

Lorenzo will set up an early Dec meeting on this. Marc Costa offered help and he also said he knows a good regulatory lawyer who just moved to California.

Action: Jaime to add Marc Costa to the list of team members for this working group.

Peter Fitzgerald said he would like to join the group.

Action: Susie, Jaime to send an email to introduce Peter Fitzgerald to Lorenzo. (done)

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Applying Grid Architecture Concepts to Bridge Back from the Future Grid

Building on the previous GridWise Architecture Council work products, this document attempts to provide a roadmap for operators, planners, developers, integrators, and policy makers as guidance to develop interoperable systems that will architect the grid of the future as described in the future states. This paper will include discussions of motivating participation of customer owned assets and opportunities for avoided costs by working toward a long-term vision rather than only short-term needs. This document will be completed in FY24.

- Committee : **Mark Paterson**, Marc Costa, Ron Ambrosio, David Forfia, Kay Aikin, Lorenzo Kristov, Farrokh Rahimi, Aaron Snyder,
- 2:00 PM PT/ 5:00 PM ET Thursday 2 times 1st and 3rd Thursday of the month

Mark Patterson is not able to be on the call today. Jaime noted that he has been leading this effort and also Kay Aikin has done a lot to keep this paper moving as well as Shawn Chandler.

Kay would like to help get this done and estimates to have 6 or 7 hours left to go although she has some other conflicting commitments at this time.

Kay asked not to restart the meeting until she has a draft ready for the group to review. The recurring meeting for it has expired. Jaime will reschedule it.

Action: Jaime Kolln will remind Kay Aikin about resuming the Grid Architecture/Build Back meetings and will to keep checking back. Also, Jaime will add Shawn Chandler to the invite list.

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Grid Architecture Concept Model for Transportation Electrification

Analyze various visions of the electrification of fossil fuel-based systems and identify areas where GWAC concepts could provide architectural value to bridge and coordinate between customer and grid objectives. Electrification will introduce dependencies such as those seen in the transportation sector due to electrification. Grid Architecture will be used to describe the touchpoints (for example through sector coupling) that will require collaboration. GMLC reference cases will be included. This activity will take place in FY24 and be completed FY25.

- 15-20 page whitepaper
- Committee: Jaime Kolln, Ron Cunningham, Farrokh Rahimi, Mark Ortiz, David Forfia, Aaron Snyder, Lorenzo Kristov, Bhaskar Mitra, Paul DeMartini
- 1:00 PM PT/ 4:00 PM ET, 4th Tuesday of the month



Liaison Reports

- NIST – David Wollman
- Green Button – Jeremy Roberts
- EPRI – Sean Crimmins
- IEEE PES – Farrokh Rahimi, Mark Sirra – SC21, IEEE 2030 Update
- ASHRAE, CTA, ASHB (formerly CABA) – Ron Bernstein
- ISO/IEC, IREC – Ken Wacks
- SEPA – Aaron Smallwood
- NARUC – Jeff Morris
- Mark Siira, IEEE, update status of 2030 project
- *Are there other organizations we should be hearing from?*

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Liaison Reports

Farrokh Rahimi – IEEE: Farrokh noted that the 2025 IEEE Meetings: Grid Edge San Diego, January 21 – 23, 2025 is approaching. There will be several GWAC people involved and also likewise at DistribuTech March 24 – 27, 2025, in Dallas, and IEEE PES Policy forum in DC . The PES General Meeting in Austin on July 27 to 31, 2025. Not sure who is participating there.

Shawn Chandler participates on the IEEE Block Chain work group. There is a new electrification issue coming out on virtual power plants and the Block Chain team got a paper accepted into that special issue. If anyone is interested in participating on the IEEE Blockchain for Energy group there are openings for more participants. There are a number of speaking opportunities coming in 2025.

Marc Costa said he could suggest some international contacts such as a few people from the Netherlands that may want to be involved.

ASHRAE - Ron Bernstein: ASHRAE will meet as part of the AHR Expo in Orlando. Ron will be giving four different presentations at the Expo. He has arranged for PNNL to have a meeting room to give a panel talk as part of AHR's educational offerings.

Ron B. is working on a new presentation on the topic of network segmentation and how to get a good cybersecurity plan for the construction of OT and operational technology network. That is a new ASHRAE group and may be a standard or an enhancement to existing standards.

Ron B. noted that he is not involved with CTA anymore. He will add Design Lights Consortium (DLC) to the liaison group. There is some new work going on in collaboration between various building systems and energy efficiency and energy incentive measures coming from utilities. He will no more in the coming weeks.

ACTION Susie to remove CTA and add DLC for Ron Bernstein's Liaison affiliations. (done)

ISO/IEC - Ken Wacks; Ken just got the news that three more standards are to be published in Geneva and will be available from each country that is a member. The standards to be published enhance the gateway between the home or building and outside by providing cybersecurity protection for occupants, data privacy and safety. We've developed a series of standards that enhance the gateway to provide functions that we call the sentry functions. The gateway not only does energy conversion but also watches data flowing in and out to make sure that it's to legitimate devices and that it does not convey any data that would jeopardize cybersecurity and customer data privacy and safety.

On the Interstate Renewable Council, IREC, Ken chairs the Customer Grid Edge Committee. We are meeting this Friday at 1:30pm to 3:00pm Eastern time. They are having a talk this week on Meter Socket adapters and the art of main panel upgrade, MPU avoidance. In simple terms this is how we connect DERS into the home electricity grid with minimal inconvenience and without requiring a new electricity panel. We have a presentation from experts from a company called Connect DER. Their VP of

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Policy and Marketing Strategy recommended the speaker to us. They have spoken previously, and it was so popular that we are having them back again. Ken Wacks is happy to provide access to the meeting for those who are interested.

SEPA - David Forfia: David presented since Aaron Smallwood had to leave the call a bit early. David attended a recent SEPA meeting. He saw many that had been in SGIP on his technical group. They discussed how to align with the incoming administration.

Aaron Snyder gave an update on the NEMA paper that he has been contributing to. They are discussing how to socialize the paper once it is final.

Aaron had put someone in the chat list already – Steve Griffith. Jaime

NEMA/IBEW – Ron Bernstein is working with the Design Lighting consortium on for training and advanced education. He has done with in the past with both groups. That project may start in early 2025 as a journeyman tutorial. Jaime suggested that Ron B. and Aaron give us a contact from NEMA for the Liaison list.

Jaime asked if Ron B. or Aaron S. could send an intro email to connect him with Steve G.

New Business

David Forfia asked about GWAC's policy on how to prevent AI attendees from note taking and recording of the meetings as anonymous participants. David gave a motion to propose amending the GWAC Bylaws to include this.

Aaron Snyder seconded the motion.

Marc Costa asked if AI is used for personal by participants if that would be acceptable.

Ron Bernstein asked in that case how would GWAC manage GWAC recorded content used by attendees for personal purposes?

Kay Aikin said she has heard these concerns at other meetings, it is becoming a common concern.

Aaron Snyder noted that he saw a recording AI bot on this call at the beginning. He could not identify the owner. He would not be able to ask how the material would be used. He added that GWAC already have a policy as stated at the beginning of the meeting about how the official recording would be used.

Ken Wacks noted that some US states have a "two party rule" that governs this situation. He said that AI bots violate the two-party rule which is strictly enforced in many states.

Jaime Kolln said the Standards groups that he is involved with do not allow the AI bots.

Jaime Kolln asked the group to approve the motion to disallow AI bots on GWAC Teams meetings.

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Kay Aikin abstained.

The motion passed with quorum.

Ron B. said we can also address this issue in Teams controls.

Ron B. added that he is concerned that if sensitive or candid information from the call was misinterpreted or used somewhere else out of context that it could result in complaints or even legal issues later on for the GWAC.

Action: Jaime Kolln send a message about AI recordings of GWAC meetings by participants to be sent out.

Ron B. noted that if someone gets on a call and has excessive background noise they may be muted by the host as well. We do this already when needed to prevent the meeting from being interrupted.

Lorenzo said he doesn't get to see the list of people attending during the meeting. Teams is set so that only the meeting hosts can see that information.

Lorenzo asked if he can see who all is attending?

Jaime said it is already captured in the meeting minutes.

Ron B. said if everyone were made a co-host in Teams it would result in a meeting with no controls and we might find that is not desirable.

Peter Fitzgerald said he can see the whole list. Jaime said it probably has to do with how you are signed into Teams.

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Upcoming GWAC Meetings

Date	Topic or Speaker	Format	Other
November 20 th , 2024	Monthly GWAC	Virtual	Teams
December 11, 2024	Monthly GWAC	Virtual	Teams
January 15, 2025	Monthly GWAC	Virtual	Teams
Feb. 10 – 12, 2025	GWAC F2F at AHR Expo in Orlando FL	F2F	Teams

Chair Bernstein added that he will not be on the December GWAC Call due to a conflict. Jaime asked him to arrange a substitute.

David Forfia offered to cover as chair and Ron B. agreed. David will be the chair in Absentia for the December GWAC meeting.

Chair Bernstein formally adjourned the meeting and thanked Alaa Mahjoub for his presentation today. He also thanked today's new meeting participants and he encouraged them to consider participating in one of the GWAC work groups.