NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

ERO Enterprise Information Technology Projects Update

Stan Hoptroff, Vice President, Chief Technology Officer and Director of Information Technology

Technology and Security Committee Meeting

November 1, 2019

RELIABILITY | RESILIENCE | SECURITY




Agenda

- ERO Information Technology (IT) Projects Update
  - Align Project Update
  - Situation Awareness for FERC, NERC and the Regional Entities (SAFNRv3)
- Electricity Information Sharing and Analysis Center (E-ISAC) Technology Projects
  - Salesforce customer relationship management (CRM)
  - E-ISAC Portal
  - Data Analysis
- Priorities Looking Ahead

Align Project Update

- Industry stakeholder engagement focused on securing evidence and data
- Industry cyber expertise has been very helpful to our efforts
- Evidence locker design and engineering underway
- Release 1 Schedule development underway

Align Project Update Application Security

- Data identification, classification, management and destruction
- Aggressive management of role-based credentials
- Control processes and auditing
- Cybersecurity Standards and Frameworks (National Institute of Standards and Technology, Federal Risk and Authorization Management Program, Critical Infrastructure Protection)
- Data and document encryption at-rest and in-transit

Align Project Update
Application Security

- Application and network cyber testing
- Multi-factor authentication for user access
- Cyber Security Risk Information Sharing Program Monitoring
- Application and data isolation
- Evidence isolation
- 24x7 monitoring activity logging

How do I stay informed?

Key communication vehicles

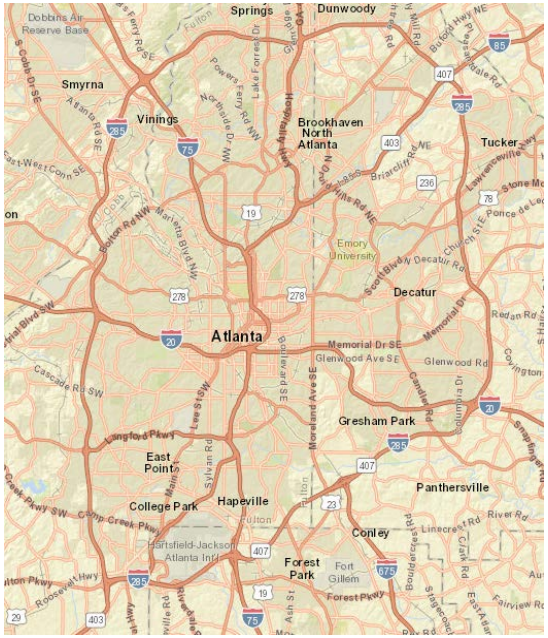
- Align newsletter for Regions and registered entities
- Regional Change Agent Network
- Dedicated project page on NERC.com: Click Here
- Upcoming Compliance Monitoring and Enforcement Program (CMEP) Regional workshops
- Trades meetings, as appropriate

SAFNR v3 Key Features

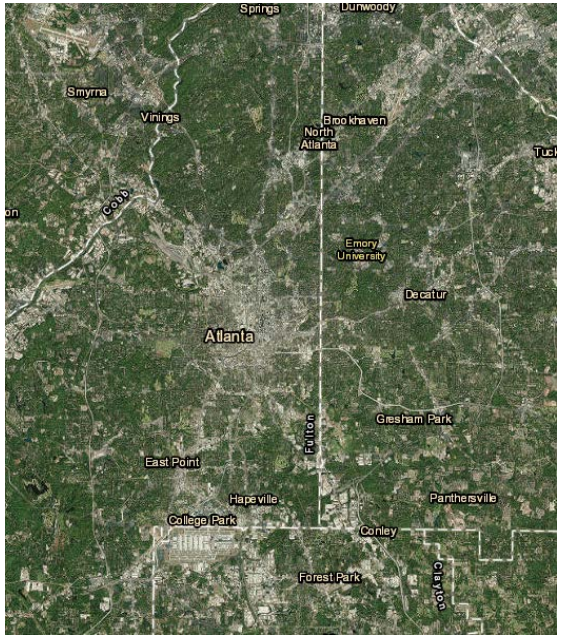
- Key Features include:
  - SAFNR v3 will deploy improved underlying technologies to increase system robustness
  - Ability to control views for ERO Enterprise, FERC, and Reliability Coordinators
  - Leverages the same real-time data on facilities (>200kV and >500W)
  - User dashboard with drill-down capability into data
  - Administrator tools that facilitate system updates, topology changes and control access levels
  - Visualization of environmental conditions impacting reliability, such as weather, fires, and space weather.
  - Overlays of GeoMAC wildfire data to aid in tracking wildfires and associated threats to Bulk Power System facilities.

SAFNR v3 – Base Maps

- Interchangeable base maps
- Commercially available imagery
- Zoom and pan similar to Google Maps controls



Street Maps

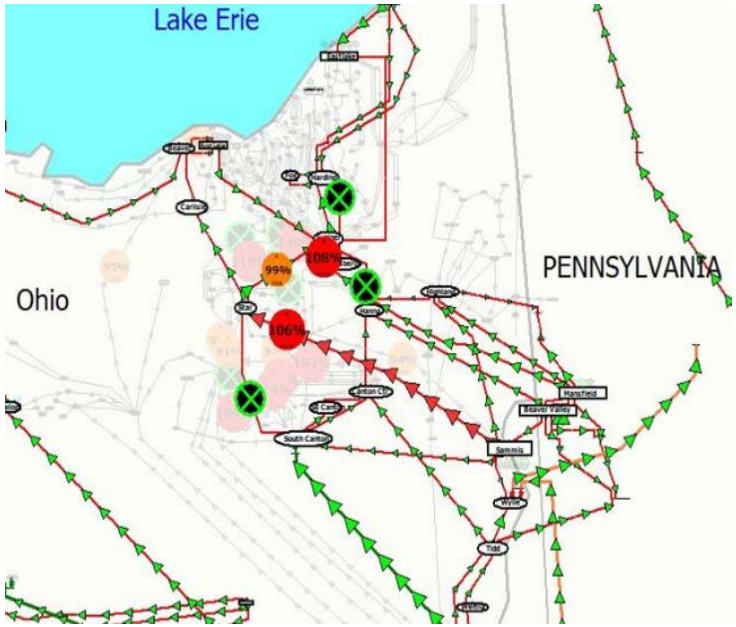


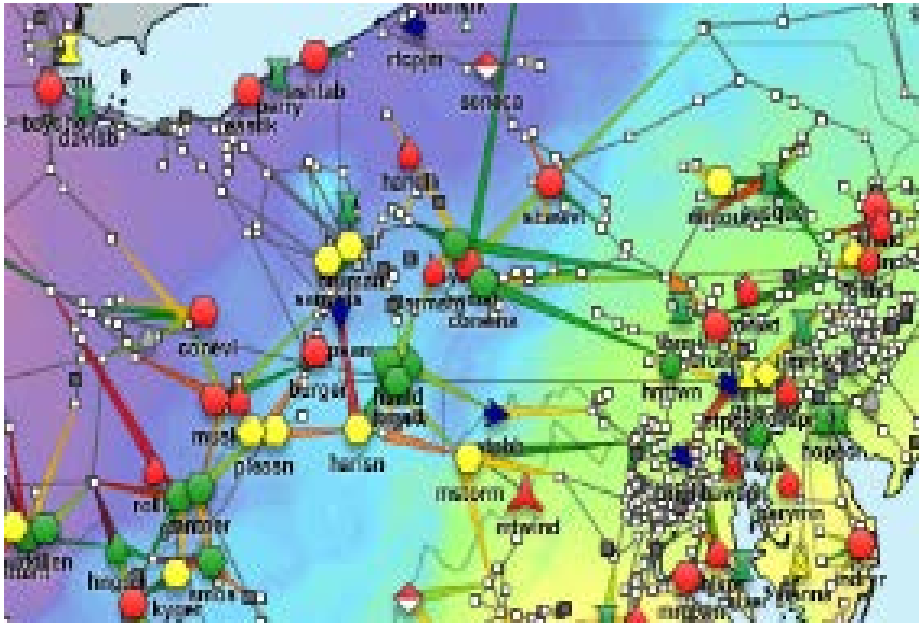
Imagery with and without Labels
Canvas

Dark Gray

SAFNR v3 - Real-Time Data Superimposed

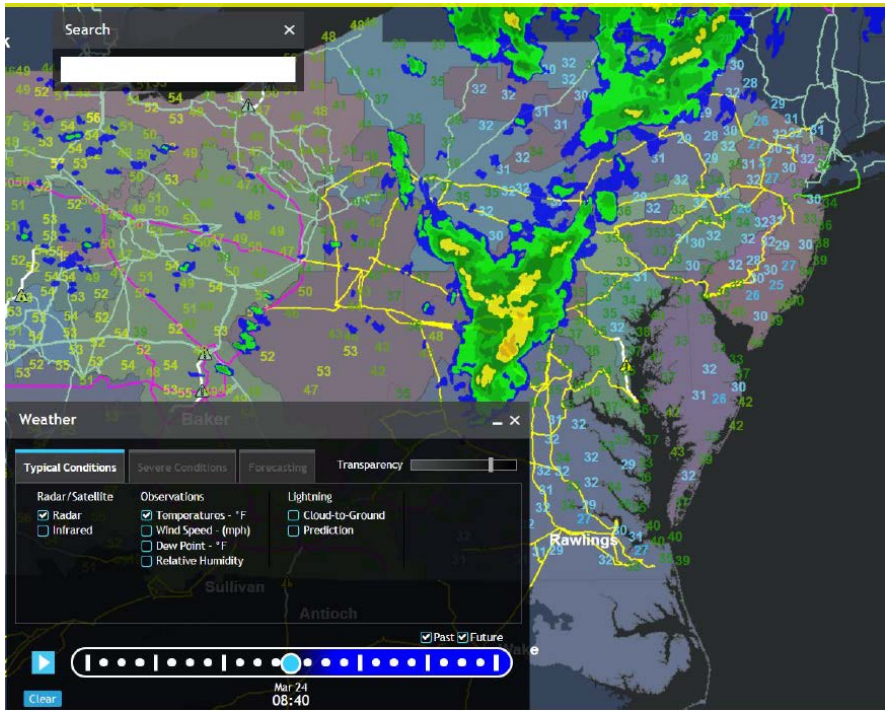
- Generators icons signify fuel type
- Substation icons signify per-unit voltage
- Commercially available geolocation (e.g., Platts, ABB Ventyx)

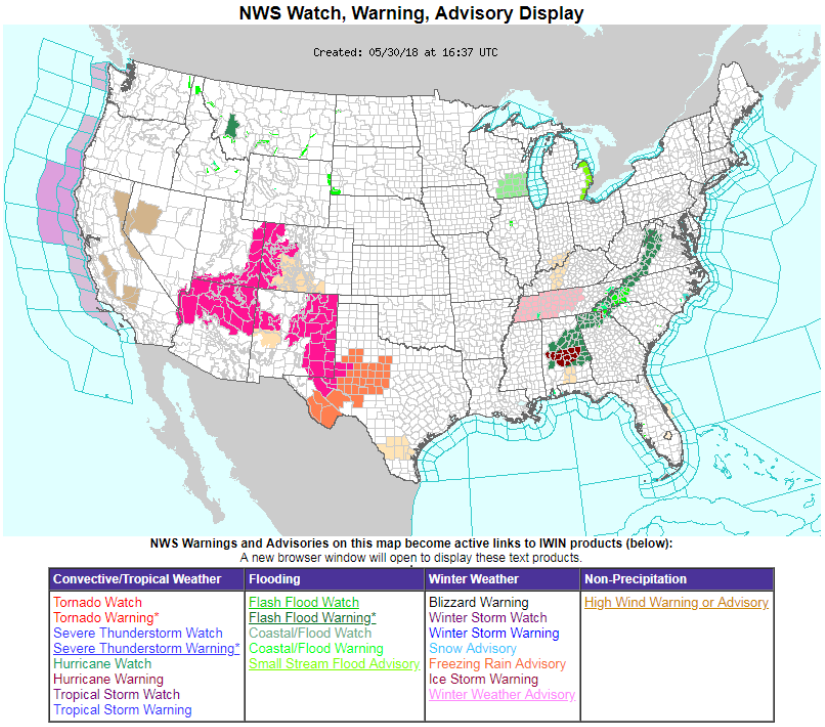




SAFNR V3 – Weather Overlay

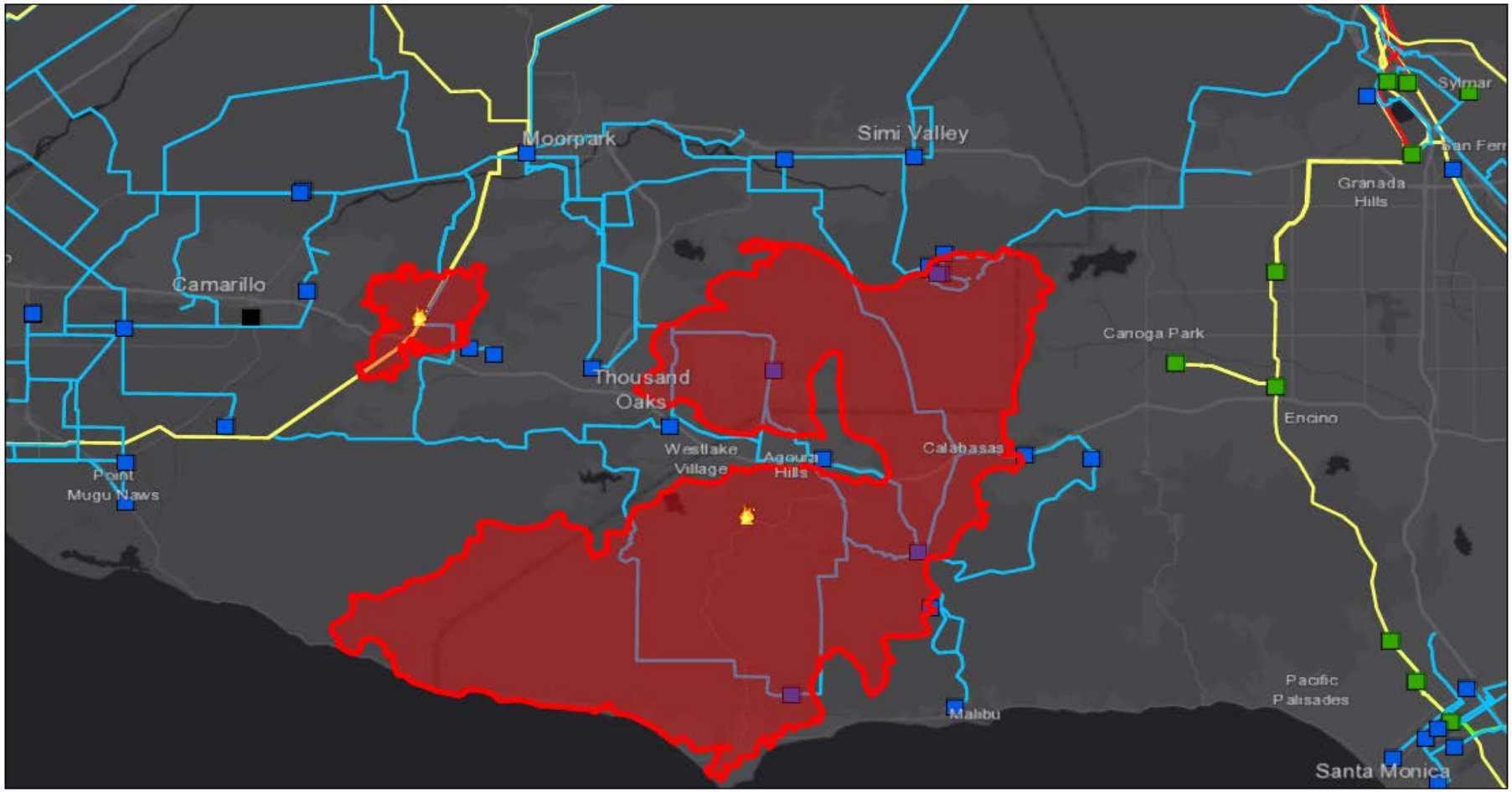
- Radar, temperature (number field or contour), wind speed field
- National Weather Service Watch-Warning – Advisory areas
- Space weather overlay (Geomagnetic Disturbance)



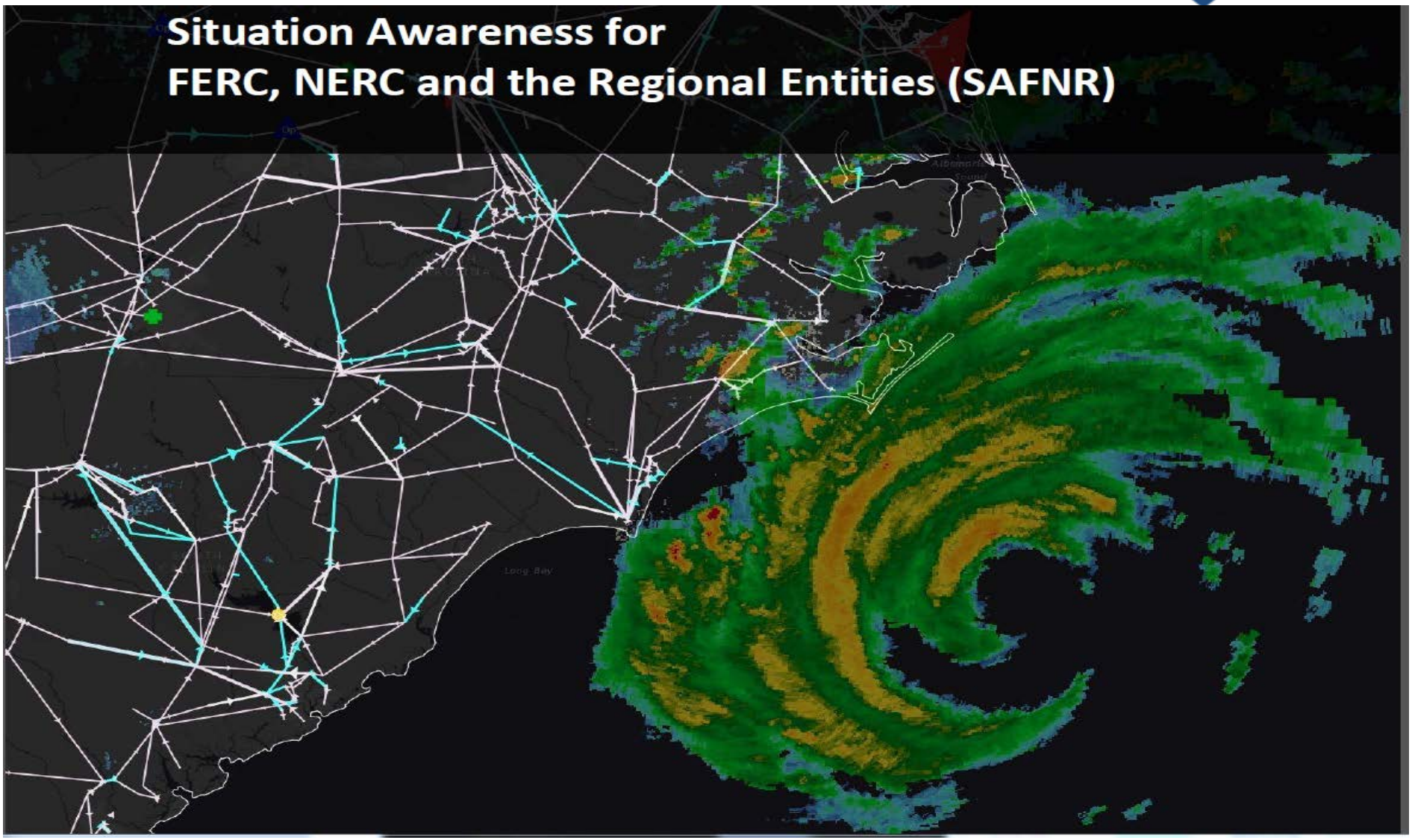


SAFNR v3 – Fires

- Esri, GIS user type Fire map overlay



SAFNR v 3 - Visualization

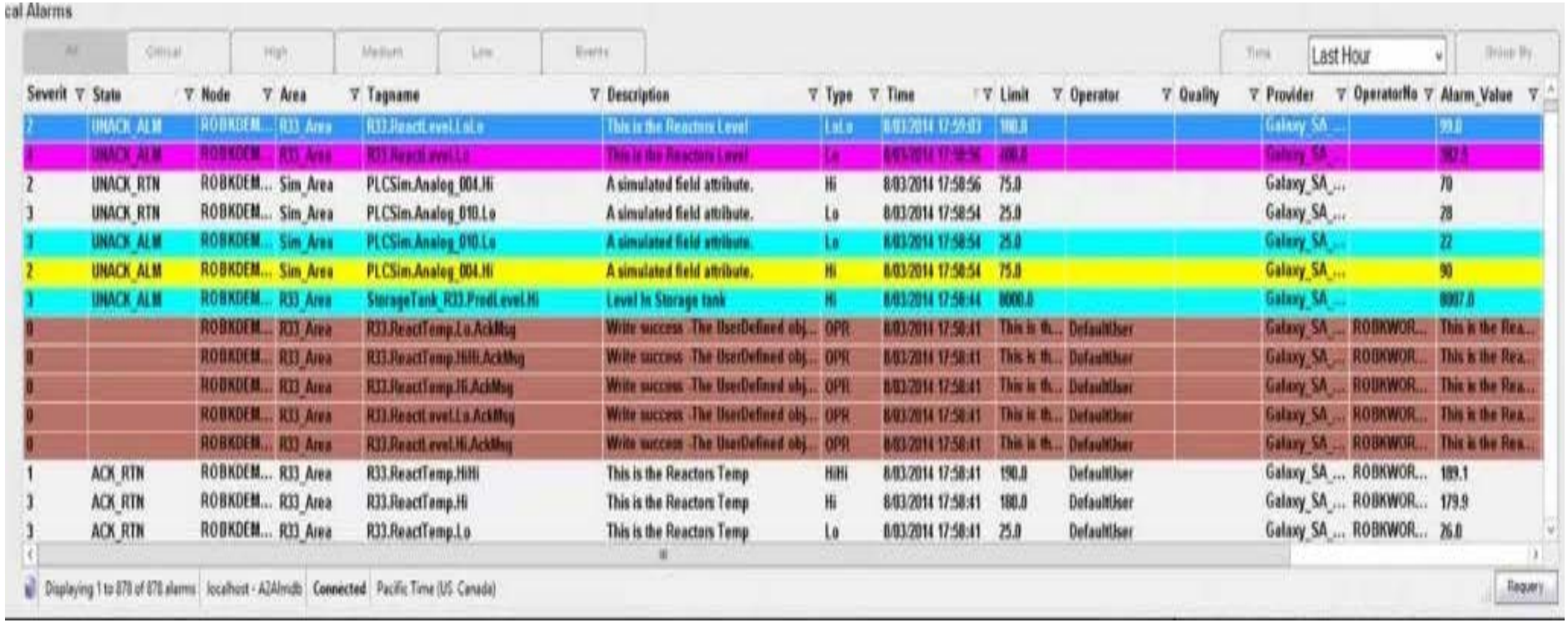


SAFNR v3 – Real Time Alerting

- Boolean logic and comparisons to administrator (BPSA) defined constants
  - Lines and generators in or out of service
  - ACE or frequency outside bands for associated times
  - Hourly load more than xx% over or under forecast
  - Data sources changing available status
- Rolling 168-hour history, equivalent to data sent by Reliability Coordinators

SAFNR v3 – Real Time Alerting

- Separate window in application able to be displayed alongside map



E-ISAC

- New customer-relationship management tool (Salesforce) in production
- E-ISAC Portal – additional refinements underway. Focus on content publication (actionable information)
- Data gathering, management and analysis

Priorities Looking Ahead

- Go-Live for Align Project Release 1 - 2020
- SAFNR v3 go live and retirement of SAFNR v2
- E-ISAC portal platform upgrade
- Analytical capabilities for the E-ISAC
- Outreach capability via a customer-relationship management solution (Salesforce) for the E-ISAC

Questions and Answers

Additional Slides

Align Project Update
How does this benefit you?

Moving to a common platform will provide:

- Alignment of **common** CMEP **business processes**, ensuring consistent practices and data gathering
- A **standardized interface** for registered entities to interact with the ERO Enterprise
- **Real-time access to information**, eliminating delays and manual communications
- **Consistent application** of the CMEP
- **More secure** method of managing and storing CMEP data

Align Release 1: What to expect as a registered entity?

Stakeholder Group

Registered Entities

Release 1 Functionality

- Create and submit Self-Reports and Self-Logs
- Create and manage mitigating activities (informal) and Mitigation Plans (formal)
- View and track Open Enforcement Actions (EAs) resulting from all monitoring methods
- Receive and respond to Requests for Information (RFIs)
- Receive notifications and view dashboards on new/open action items
- Generate report of Standards and Requirements applicable to your entity
- Manage user access for your specific entity

Align Release 1: What to expect as a Regional Entity?

Stakeholder Group

Regional Entities

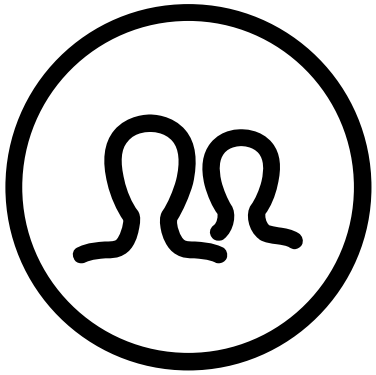
Release 1 Functionality

- Receive Self-Reports and Self-Logs from entities
- Manually create findings that result from any monitoring method (Audits, Spot Checks, Investigations, Periodic Data Submittals (PDSs), Self-Certifications, Complaints)
- Perform Preliminary Screens, Potential Noncompliance (PNC) Reviews, and disposition determinations for each PNC/EA
- Send and received responses to RFIs
- Trigger notifications such as Notice of Alleged Violation(s) and Proposed Penalty or Sanction, Notices of Confirmed Violation(s), Compliance Exception Letter(s), Find, Fix, Track & Report Letter(s), and Settlement Agreements
- Receive, review, and approve mitigating activities (informal) and Mitigation Plans (formal)
- Receive notifications and view dashboards on new/open action items
- Generate report of Standards and Requirements applicable to a registered entity

Align Release 1: What to expect as NERC?

Stakeholder Group

NERC Users



Release 1 Functionality

- Perform oversight of the Regional Entities' activities
- View dashboards on new/open action items
- Create reports required by FERC related to Enforcement and Mitigation activities
- Generate report of Standards and Requirements applicable to a registered entity

Align Future Releases: What to expect?

Release 2 Functionality Est. Q2 2020

- Technical Feasibility Exceptions
- PDSs
- Self-Certifications

Note: A strategy is being developed for how these monitoring methods will be managed in the gap between Releases

Release 3 Functionality Est. Q4 2020

- Compliance Planning (Risk, CMEP Implementation Plan, Inherent Risk Assessment, Internal Controls Evaluation, Compliance Oversight Plan)
- Compliance Audit
- Spot Check
- Compliance Investigations
- Complaints

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E-ISAC

ELECTRICITY INFORMATION SHARING AND ANALYSIS CENTER

E-ISAC Update

Jim Robb, President and CEO

Technology and Security Committee Meeting

November 1, 2019

TLP:GREEN

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Agenda

- 10/03/2019 Member Executive Committee (MEC) meeting
- GridSecCon 2019 Recap
- GridEx V Update
- Recommended 2020 Performance Metrics
- Member Information Sharing Initiatives

MEC Meeting – Key Items

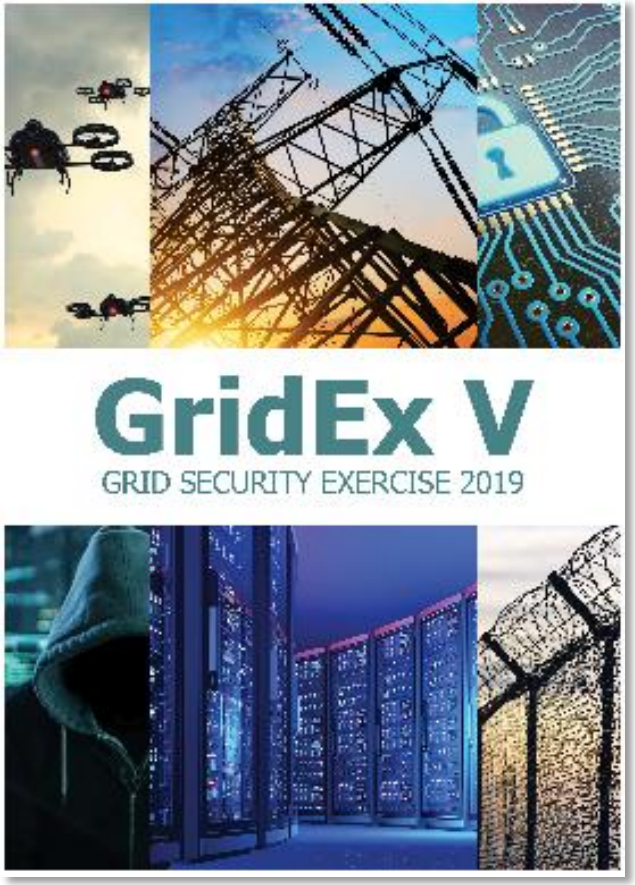
- Strategic Plan – Key Activities
  - Initiatives to Increase Member Information Sharing
  - Strategic Partnerships Update
    - Financial Systemic Analysis and Resilience Center
    - IESO Collaboration
    - MS-ISAC Collaboration
  - Government Engagement Update
    - DOE Engagement – Memorandum of Understanding
    - Increased Collaboration with the DHS, NSA, DOD
  - Security Operations Staffing
    - 24/5 by 12/31/2019
    - 24/7 by Q3 2020
  - Endorsed Proposed 2020 Performance Metrics

GridSecCon 2019 Update

- Co-hosted with SERC in Atlanta, GA, October 22-25, 2019
- More than 600 Attendees
- Keynote speakers:
  - Karen S. Evans, Brian M. Harrell, Tom Fanning, Brian Thumm
  - Emphasis on increased government-industry collaboration and information sharing
- Women's Networking Breakfast
- Expert Panels and Training Sessions
- Classified and Unclassified Threat Briefings
- Positive feedback from participants and attendees
- Evaluating outsourcing options for some functions in 2020

GridEx V Update – November 13-15

- Simulates a severe cyber-physical attack on electricity and other critical infrastructures across North America
- 420 participating utilities (an increase from 206 in GridEx IV)
- Increased participation from distribution utilities, natural gas, government, and law enforcement
- New approach to Executive Tabletop focusing on extraordinary operational measures and centered on NPCC region
- CEO “Hotwash” call and staff secure video teleconference on November 15



2020 Performance Metrics

- Metrics designed to align with goals and key supporting activities in the Long-Term Strategic Plan
- Expected to evolve over time as processes and data sources mature
- Reviewed with and reflecting input from the MEC Working Group
- Endorsed by the MEC at the October 3 meeting
- Seeking Technology Security Committee endorsement
- Subject to final review by Corporate Governance and Human Resources Committee

What's changed since the last TSC meeting?

- Refined the metric definitions
- Refined the method and approach for calculation and data collection
- Identified metric owners and data sources
- Started measurement for a subset of the metrics
- Discussion regarding development of future targets (2020 and beyond)
- MEC review and endorsement

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E-ISAC

ELECTRICITY INFORMATION SHARING AND ANALYSIS CENTER

Recommended 2020 Metrics

Engagement
% increase in prospective member organizations engaged.
% increase in prospective member organizations that sign up to use the E-ISAC portal.
Frequency of member user interactions by channel
Elapsed time since last member interaction (e.g. share or contact)
% increase in diversity of types of member organizations participating in Industry Engagement Program and E-ISAC led workshops
% increase in Canadian member organizations
Canadian Electricity Association support of 2021 budget
% increase in GridEx participation
% increase in cross-sector participation in GridEx
% increase in state government participation in GridEx
Quality and usefulness of CRM tool and data: actual results compared to business case assumptions

Information Sharing
Member Portal Sharing: % increase in number of portal posts by member organizations
Total Information Shares: % increase in number of information shares by source, channel, and event type
Partner Information Sharing: % increase in volume of information shares received from partner organizations % increase in quality of information shares received from partner organizations
Member Information Sharing: Volume of member organization information sharing within predefined peer groups
Member Information Sharing: % increase in quality and unique value-add information received from member organizations
% increase in targeted feedback from members and partners
Implementation of Portal enhancements per approved project plan
Security Watch Operations coverage: • On Duty – Core Hours Head Count • On Call – Off Hours Head Count • On Duty – Off Hours Head Count
Security Watch Operations sharing: IOCs loaded into external sharing platform.

Analysis
% increase of content enriched by E-ISAC analysts
Unclassified Threat Workshop content survey results (relevant, timely, unique, actionable)
% increase in joint analytical products with partners
E-ISAC Data Platform project implementation variance from plan

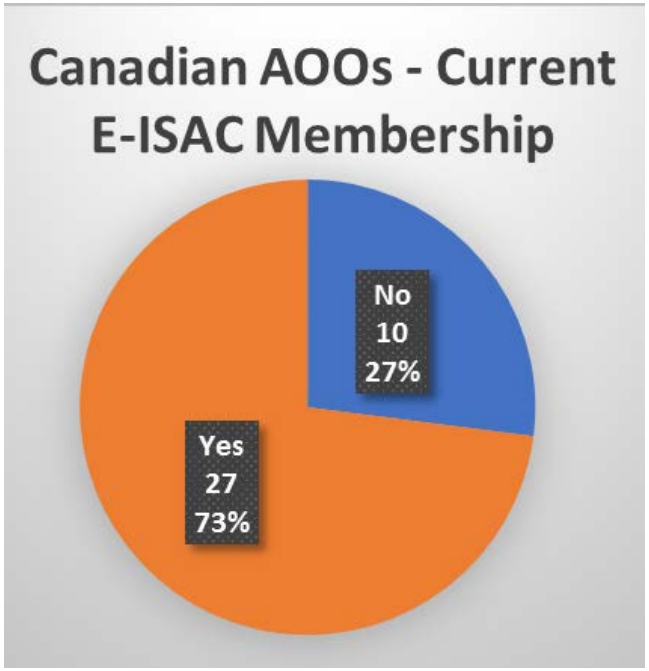
Staffing and Attrition
Annual employee attrition rate
Total staff and period over period net change

Metric Example – Engagement

Metric: Diversity of types of member organizations participating in Industry Engagement Program (IEP) and E-ISAC-led workshops

	2019	2018
Total Member Companies	19	17
Investor-Owned	8	6
Cooperative	5	0
State/Municipality	6	10
Federal/Provincial	0	1
Canadian	0	1
Total Participants (people)	24	22

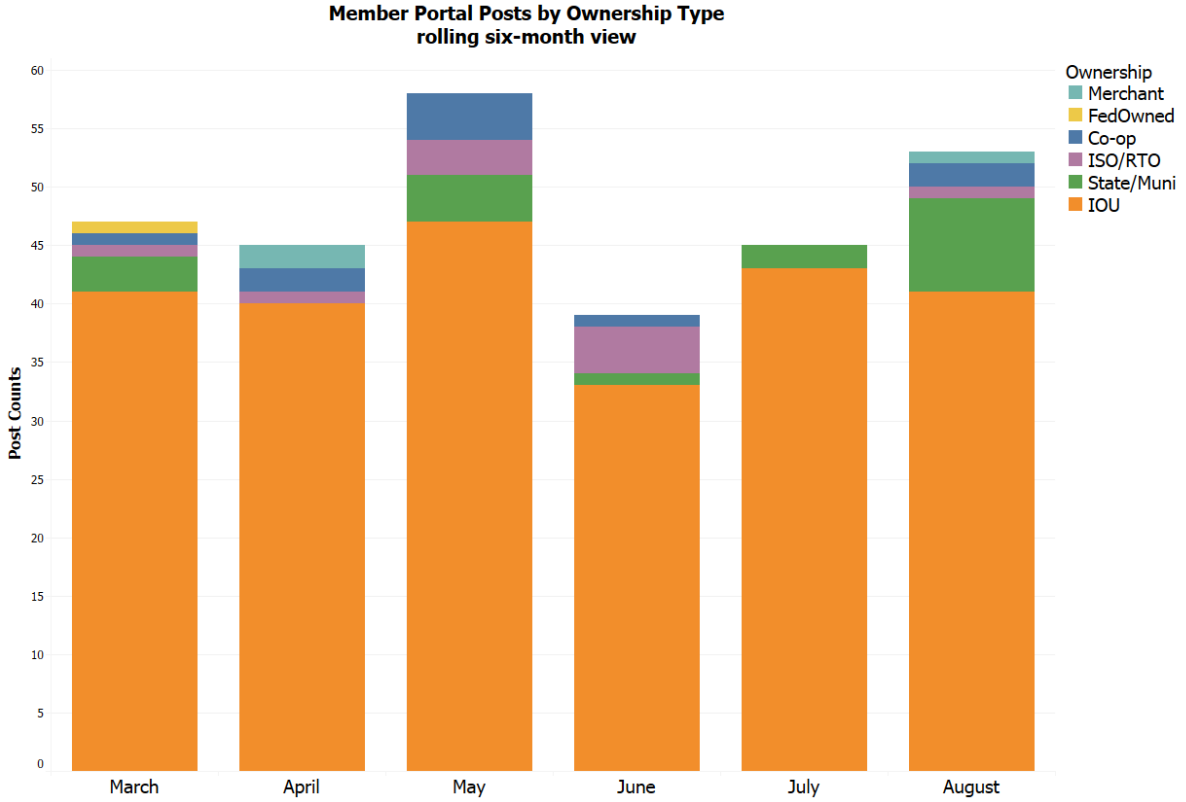
Metric: Increase in Canadian member organizations



- More cooperatives engaged in IEP during 2019 than in the prior year
- Diversity measurement *only* includes IEP participation and does *not* include other E-ISAC-led workshops
- Canadian asset owner and operators (AOO) membership uses Canadian Electricity Association data as the basis for target Canadian AOO population

Metric Example – Information Sharing

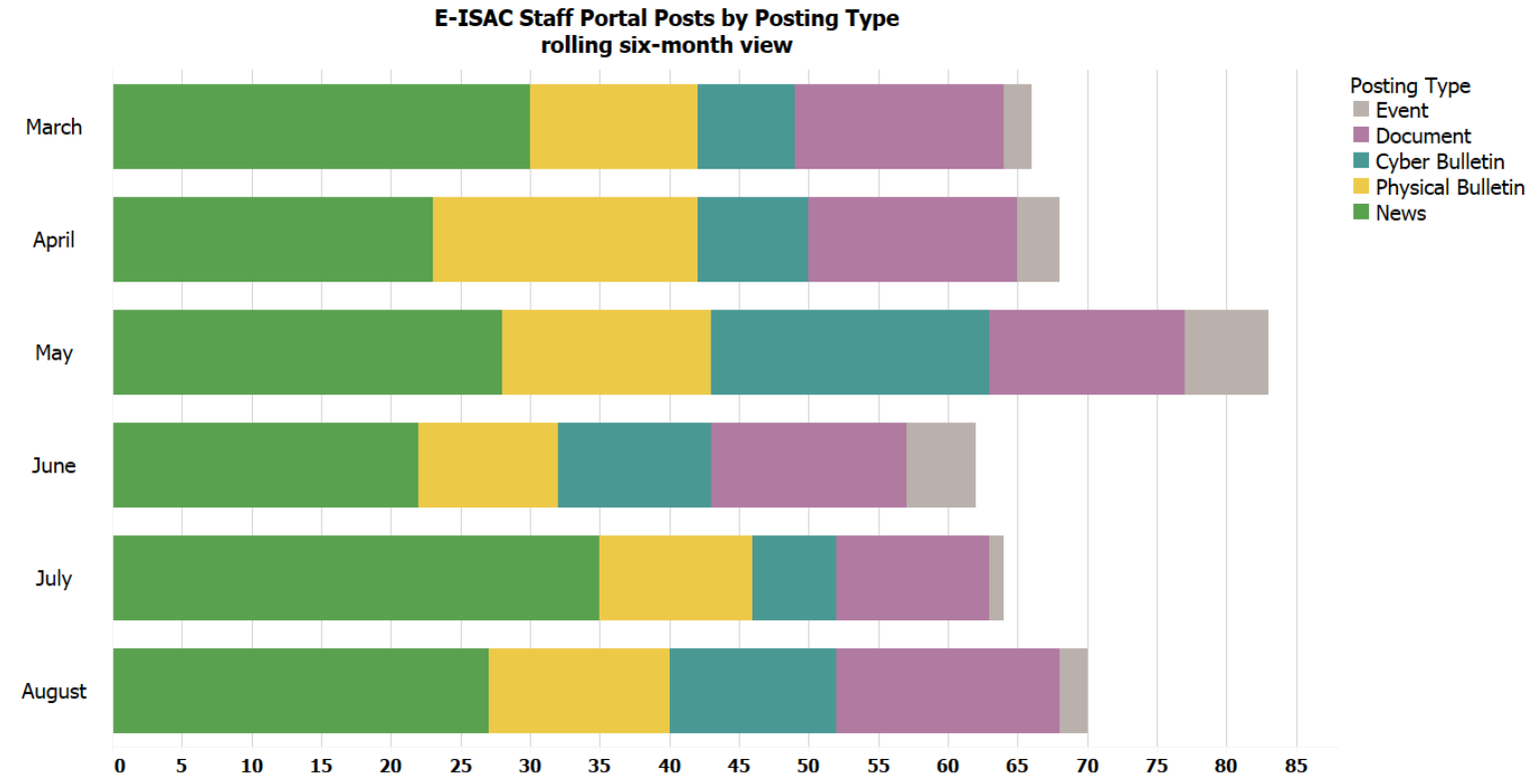
Metric: Member Portal Sharing - increase in number of Portal posts by member organizations



- Includes both cyber and physical security bulletins posted to the E-ISAC Portal
- Information reported via channels outside the Portal (such as bulk reporting) is *not* included

Metric Example - Analysis

Metric: Enriched content posted by E-ISAC analysts



Enriched content:

- Information shares and open source intelligence that has been evaluated and synthesized by E-ISAC
- Either additional or combined content has been added to the originally shared information, or filtering of information has occurred

Member Information Sharing Initiatives

- Critical to enhancing the E-ISAC's products and services
- Scorecard developed and shared with industry CEOs
- Developed a short guide for information sharing
  - Provides examples of what and how members should share
- Task group of MEC Working Group focusing on issue
  - Documenting findings on mechanism to increase sharing
  - Developing a data standardization document

Priorities Ahead

- 24/5 and 24/7 security operations staffing
- Maximize and leverage the value of the CRM/Salesforce tool
- Improve the value and delivery of products and services
- Information sharing by industry and our strategic partners
- Quality and timeliness of the products and services provided to members
- Continuing to strengthen relationships with government and strategic partners
- Using metrics to improve our focus and execution

Questions and Answers