Transmission Services

Executive Ownership: Jeff Cook, Vice President-Planning and Asset Management
Today’s Presenter: Jana Jusupovic, Transmission Asset Manager
BOUNTEVILLE POWER ADMINISTRATION

Transmission

Capital Assets

- **15,000+** Circuit Miles of High Voltage Transmission Lines
- **260+** Substations
- **~12,000** Miles of access roads, bridges, culverts
- **732** Communication sites
- **2** Control Centers with 85+ automation systems
- **3,500** Miles of Fiber
- **195,000+** Acres of Right-of-Way
Capital Program
Asset Sub-Categories & Business Drivers

EXPAND & PFIA
30% - 50%

SUSTAIN
50% - 70%

Safety
Compliance
Reliability
Customer Requests
Total Economic Cost models
Criticality, Health and Risk
Subject Matter Expertise
Asset Criticality

1. Criticality, Health & Risk (CHR) - Scored impact dimensions include:
   a) Safety (completed)
   b) Reliability (completed)
   c) Environment- Pollution and Abatement, Natural Resources (completed)
   d) Environment- Cultural (not completed)
   e) Financial (not completed)
   f) Compliance (logic sheet completed, scoring not completed)

2. Asset specific criticality
   - Specific to assets in each individual asset program
     • Supports prioritizing asset replacements within that program
Asset Health

1. CHR- Asset Health algorithms applied to structured Cascade data
   a) The health score calculation:
      • Uses an age-based degradation model
      • Uses known condition information and a Reliability Modifier, if appropriate.
   b) Not all assets are incorporated into CHR at this time.
      a) Assets remaining to be added in are:
         a) Fiber, control center and power system control/system protection control

2. Asset specific health data
   a) Specific to individual assets
   b) Based on specific factors unique to certain assets
   c) Refreshed everyday
Assessing Risk

1. Risk matrices available for substation assets
   - Scored impact dimension to represent criticality; Scored from 1 to 7
   - Health scoring to represent likelihood; Scored from 1 to 10

2. Risk assessments consider the following:
   i. SME input
   ii. Health of assets
   iii. Outage data
   iv. Wildfire risk
   v. Cyber security
   vi. Criticality dimensions:
      i. Reliability, safety, environment, compliance, financial
   vii. Total Economic Cost data to allocate funds at an asset program level
CHR Maturity Roadmap

**Criticality (C)**
- FY 22: Compliance Scoring
- FY 23: Financial Logic Sheet
- FY 24: Financial/Cultural Scoring

**Health (H)**
- FY 22: Continued Evaluation
- FY 23: Continued Evaluation
- FY 24: Continued Evaluation

**Risk (R)**
- FY 21: Maturity Level 1 - Health & Probability are Beginning to Be Automated
- FY 24: Maturity Level 2 - Risk/Logic Values are Signed Into Policy With Business Owners
- FY 27: Maturity Level 3 - Initial Operating Capability Reached Policy, Process, Systems Functioning With Delivering Quantified Risk and Value Per Asset
Asset Management
Investment
Decision Making Criteria & Tools
Transmission Current State

• Asset Managers initiate according to risk assessments within their sustain program areas
  1. Prioritization decisions based on asset data, subject matter expertise (SME), TEC models and CHR
  2. CHR is used as a component of decision making, but is not the only factor.
     a) Algorithms require further refinement to apply to more asset types
     b) Impact dimension scoring is not yet complete for all dimensions
     c) May not apply to all assets (exclusions have not been defined)
     d) Risk scoring continues to mature
  3. Program planning is impacted by lack of visibility into anticipated execution rates, at the asset level
Maintenance Planning

Priority 1
Emergency/unplanned work with a safety hazard, impacts delivery to customers, or curtails Transmission sales

Priority 2
Driven by regulatory and compliance mandates, time specific contracts, and financial goals.

Priority 3
Self-imposed internal factors, part of a Business Case, non-time bound contracts.

Priority 4
Not flagged as a high priority.

Priority 5
Assets that can go beyond their maintenance scheduled work
Transmission Asset Management Forecast Process

PLANNING DEMAND PROJECTIONS
- TEC Models
- Planning Demand
- CHR Analysis

EXECUTION DELIVERY PROJECTIONS
- SAMP
- Weather, Pandemic, Unknowns
- Constraint Information
- Budget Limitations & Goals
- Historical Execution

Customer Requests
- PFIA
- Expand
- Sustain

SME Input
- Cyber Security
- Criticality
- Wildfire
- Health
- Risk

Resources
- Material
- Outage
- Delivery Models
- Work Type
Transmission AM Forecast Process continued

• “Typical” projects (bundles) are generally very complex:
  1. Almost always include: multiple assets, multiple funding sources (capital/expense), a multi-year schedule, extensive outage planning, complex resource planning, numerous materials required
  2. Often include: environmental, land right and/or cultural planning factors/coordination, seismic planning considerations

• Historical “unknowns” that have impacted execution that made forecasting unusually hard
  1. Outage availability changes based on urgent system needs
  2. Cultural/environmental factors
  3. Weather (for example- fire danger)
  4. Resource constraints
  5. COVID-19 pandemic impacts to material and resource availability
  6. Customer projects
Questions?