

T&D Quality Program Update

OPCO

April 28, 2021



Quality Update – Highlights

Increased Visibility of Conformance Rates for T&D Quality Programs (OE Goal)

- Monthly meetings with key stakeholders to review Quality results : T&D SLT, Distribution Business Line (RPPM, Region Constructional Manager (RCM), District Manager Core Team, etc.), Transmission Business Line, and Vegetation Management
- Business Lines receive monthly emails with Quality results and links to Quality Dashboard

Updated Risk Ranking of T&D Quality Programs (OE Goal)

- Quality collaborated with ERM and AMSE to update the 2021 Quality Program rankings and sampling targets
- Currently working with AMSE to transition from REAX to Technosylva for structure level risk data

Tracking Status for Remediating Corrective Action Findings (OE Goal)

- Launched program with article in [T&D E-Wire \(Jan/Feb 2021\)](#) promoting the new T&D Corrective Action Program
- Received 18 requests for evaluation: 4 completed, 9 pending, and 5 transferred for continuous improvement evaluation
 - Initiated Cause Evaluation on top finding for Dist. Construction (elimination would increase score to ~ 88%)

Quality Program Targets for 2021 (Tier 1 Metrics)

- Distribution Construction target 90% (+/- 5%) – **Not meeting YTD March target**
- Transmission Construction target 94% (+/- 4%) – **Meeting YTD March target**
- Overhead Detail Inspection target 97% (+/- 1%) – **Not meeting YTD March target**
- Vegetation Management CCD target 95% (+/- 4%) – **Meeting YTD March target**

Distribution Construction – YTD 2021 Results Through March

2,006
Total Inspections

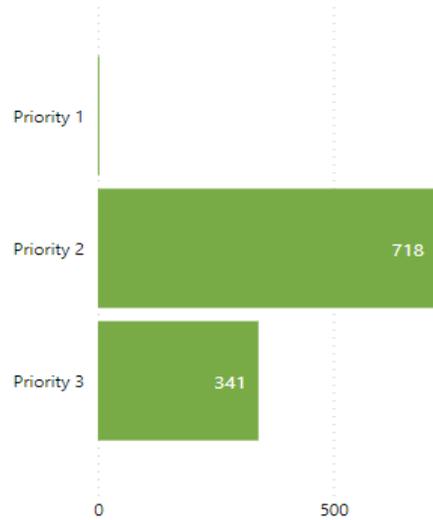
1,463
Pass Total

543
Potential Non-Conformances

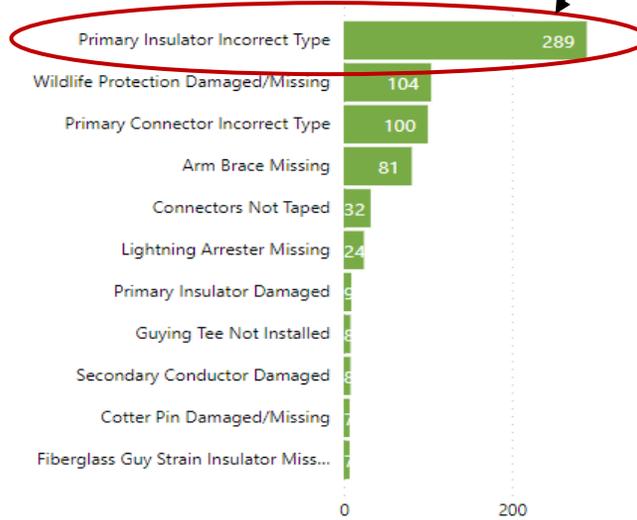
73%
P1 & P2 Total CR%

Asset life issue, remediation within 5 years. Initiated Cause Evaluation. Elimination would increase CR score to ~88%

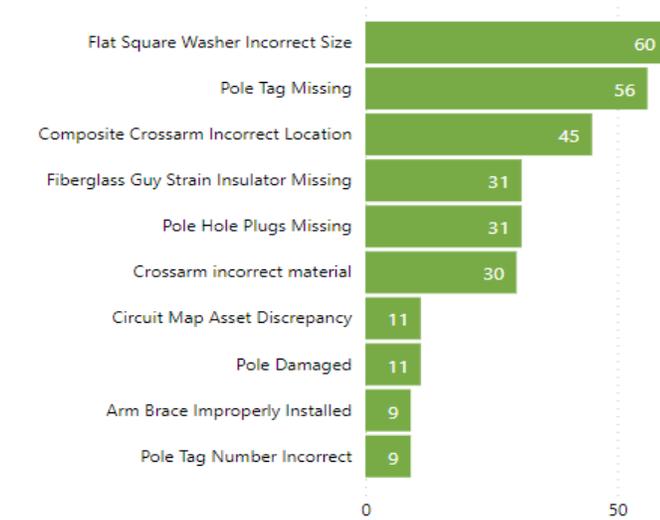
Non-Conformances by Priority



Top 10 P1 & P2 Finding Categories



Top 10 P3 Finding Categories



Program Name - REAX Score	Total QC Inspections	FLOCS			P1 & P2 Findings					P3 Findings	
		P1 & P2 PNC	P1 & P2 CR	Threshold Limit	P1	P2E	P2	Total P1 & P2	Open	Past Due	FLOC PNC
Distribution Construction (Very High)											
Very High	453	190	58%	100.0%	0	0	264	264	258	0	39
High	980	271	72%	98.0%	1	0	361	362	336	0	129
Medium	434	69	84%	95.0%	1	0	79	80	65	0	75
Low	139	13	91%	95.0%	0	0	14	14	13	0	12
Total	2,006	543	73%	97.0%	2	0	718	720	672	0	255

Distribution Construction – YTD 2021 Results Through March

Total

2,006
Total Inspections

1,463
Pass Total

543
Potential Non-Conformances

73%
P1 & P2 Total CR%

SCE

322
Total Inspections

289
Pass Total

33
Potential Non-Conformances

90%
P1 & P2 Total CR%

Contractor

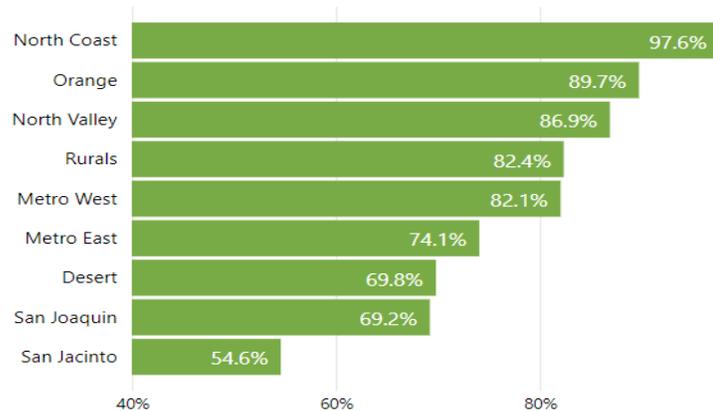
1,684
Total Inspections

1,174
Pass Total

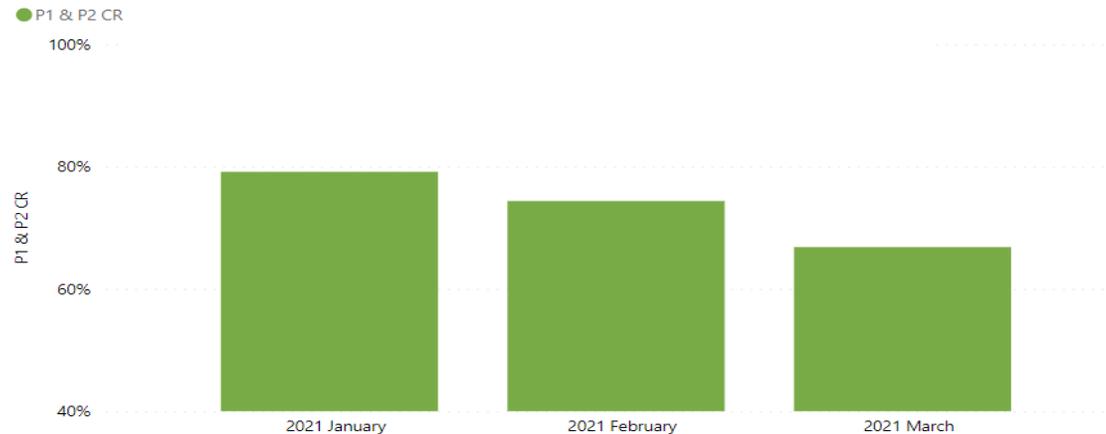
510
Potential Non-Conformances

70%
P1 & P2 Total CR%

Conformance Rate by Region | District



Conformance Rate Trending



Transmission Construction – YTD 2021 Results Through March

Exceeding target of 94% (+/- 4%)

277
Total Inspections

270
Pass Total

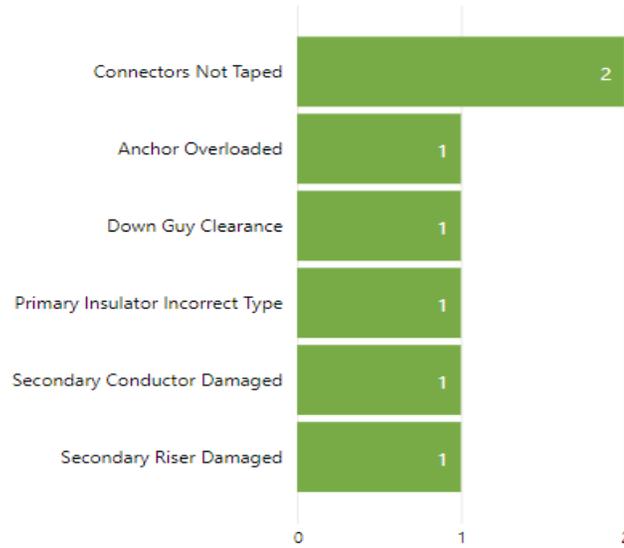
7
Potential Non-Conformances

97%
P1 & P2 Total CR%

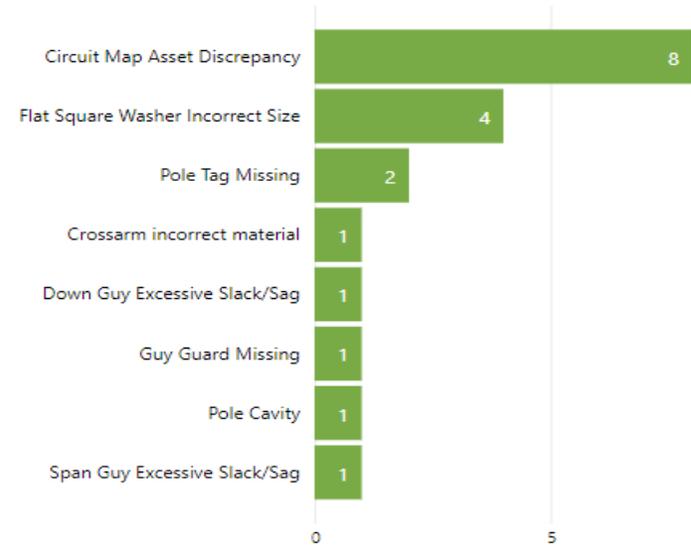
Non-Conformances by Priority



Top 10 P1 & P2 Finding Categories



Top 10 P3 Finding Categories

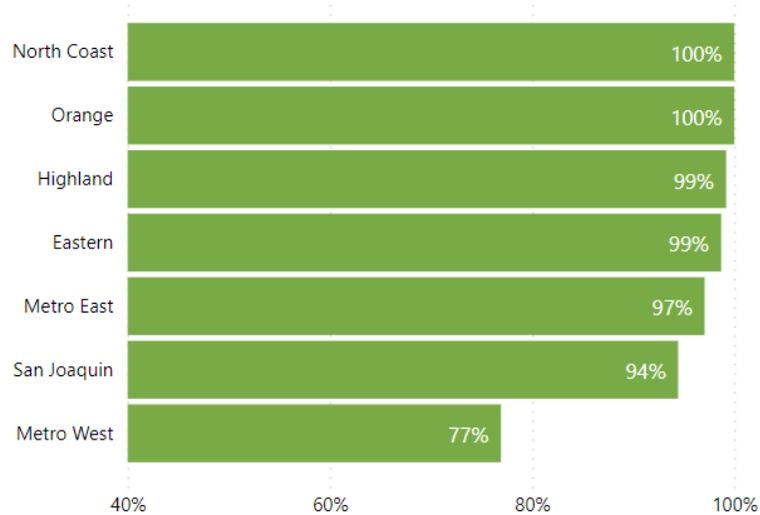


Program Name - REAX Score	FLOCS				P1 & P2 Findings						P3 Findings	
	Total QC Inspections	P1 & P2 PNC	P1 & P2 CR	Threshold Limit	P1	P2E	P2	Total P1 & P2	Open	Past Due	FLOC PNC	P3
Transmission Construction (Very High)												
Low	164	4	97.6%	95.0%	0	0	4	4	4	0	5	6
Medium	97	2	97.9%	95.0%	0	0	2	2	2	0	13	13
High	16	1	93.8%	98.0%	0	0	1	1	1	0	0	0
Total	277	7	97.5%		0	0	7	7	7	0	18	19

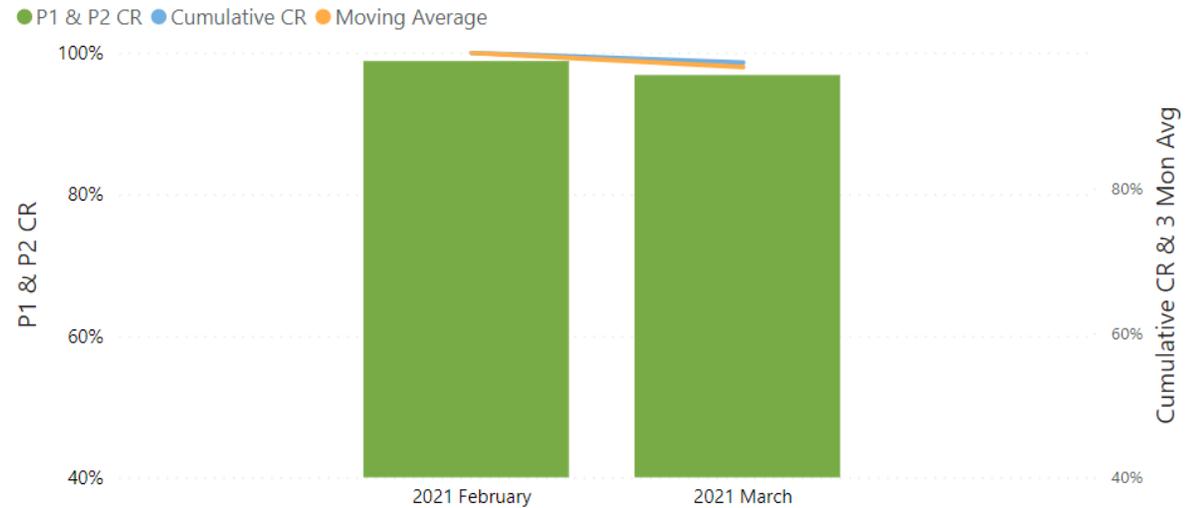
Transmission Construction – YTD 2021 Results Through March

Total	277	270	7	97%
	Total Inspections	Pass Total	Potential Non-Conformances	P1 & P2 Total CR%
SCE	91	90	1	99%
	Total Inspections	Pass Total	Potential Non-Conformances	P1 & P2 Total CR%
Contractor	186	180	6	97%
	Total Inspections	Pass Total	Potential Non-Conformances	P1 & P2 Total CR%

Conformance Rate by Grid



Conformance Rate Trending



Overhead Detail Inspection - YTD 2021 Results Through March

2,711
Total Inspections

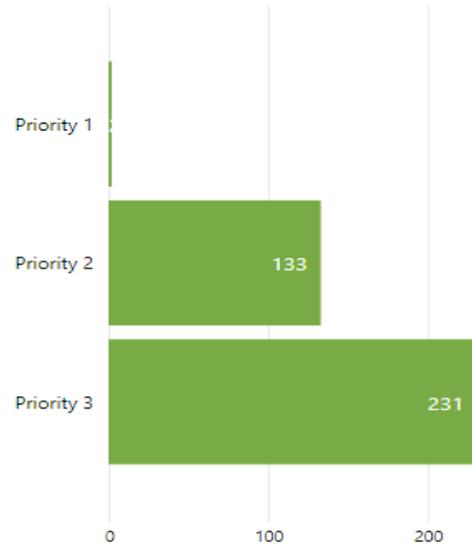
2,584
Pass Total

127
Potential Non-Conformances

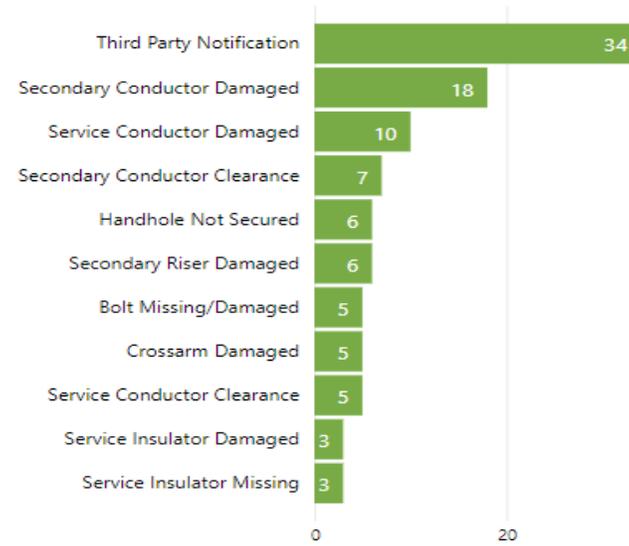
95%
P1 & P2 Total CR%

Tier 1 Target 97% (+/- 1%)

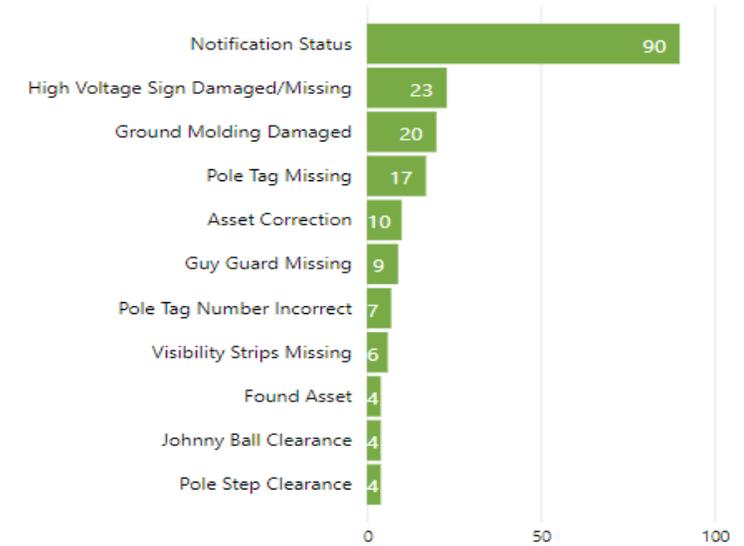
Non-Conformances by Priority



Top 10 P1 & P2 Finding Categories

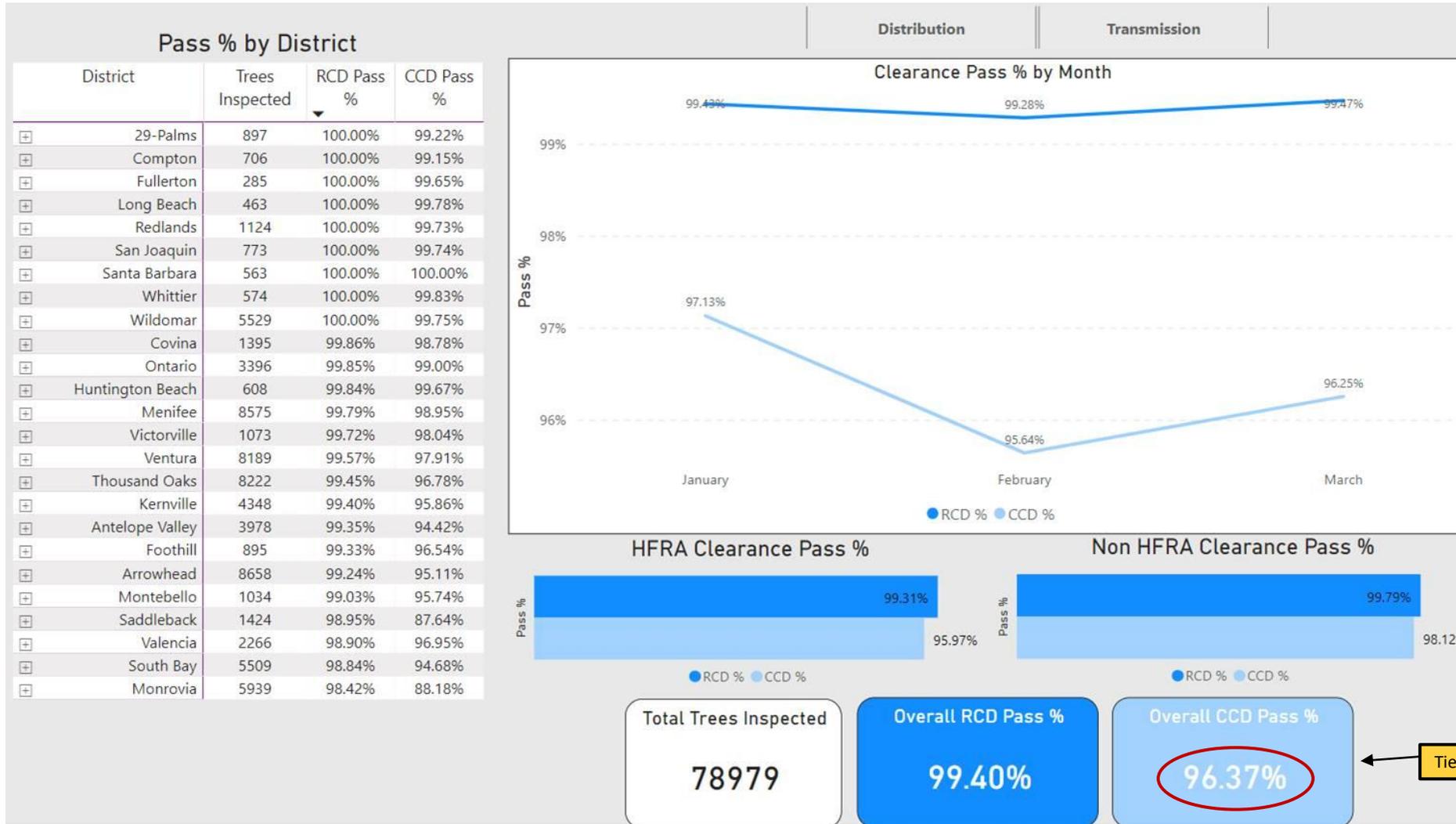


Top 10 P3 Finding Categories



Program Name - REAX Score	FLOCS				P1 & P2 Findings						P3 Findings	
	Total QC Inspections	P1 & P2 PNC	P1 & P2 CR	Threshold Limit	P1	P2E	P2	Total P1 & P2	Open	Past Due	FLOC PNC	P3
ODI (High)												
Low	948	42	95.6%	90.0%	0	0	43	43	32	0	79	85
Medium	840	62	92.6%	95.0%	2	0	67	69	14	0	66	79
High	891	22	97.5%	95.0%	0	0	22	22	14	0	63	66
Very High	32	1	96.9%	98.0%	0	0	1	1	0	0	1	1
Total	2,711	127	95.3%		2	0	133	135	60	0	209	231

Vegetation Management T&D – YTD 2021 Results Through March



February decline in CCD % primarily resulting from UTS performance in Monrovia District. CCD in Monrovia was 80.19%. Discussed with UTS on 3/5/21

Tier 1 Target 95% (+/- 4%)

NOTE: RCD & CCD results indicate tree condition clearance at time of QC, not at time of trim

T	Compliance Zone		HFRA	D	Compliance Zone		HFRA	Non-HFRA
	RCD = Regulation Clearance Distance	CCD = Compliance Clearance Distance (RCD x 1.5)			RCD = Regulation Clearance Distance	CCD = Compliance Clearance Distance (RCD x 1.5)		
	10'	15'	10'	4'	6'	18'	3'	

Revised Quality Program Scope Targets Based on Updated Risk Profiles

Increased sampling increases confidence level of result

Program	2020 Actuals	Proposed Minimum 2021 Scope Targets	Delta from 2020 Actuals	Quality Ranking	Additional Comments
Overhead Detailed Inspection (ODI)	18,088	4,378	-13,710	HIGH	Sample size based on 2020 conformance rate, oversampled in 2020 due to program redesign
Distribution Planning	753	4,243	3,490	HIGH	QC pilot program in 2020
Underground Inspections	0	500	500	MEDIUM	Program restarted in 2021, sample size based on 2018 conformance rate
Intrusive Pole Inspections	801	500	-301	MEDIUM	Sample size based on 2020 conformance rate
Pole Loading Program	1,011	400	-611	MEDIUM	Scope will be 100 a month until the program retires in April 2021
Distribution Construction	6,533	8,235	1,702	VERY HIGH	Sample size based on 2020 conformance rate
Transmission Construction	476	800	324	MEDIUM	Sample size based on 2020 conformance rate
Aerial Inspections Distribution	586	1,820	1,234	MEDIUM	QC pilot program in 2020
Transmission Overhead Inspection Program (TIMP)	380	1,493	1,113	MEDIUM	QC pilot program in 2020
Generation (Pilot)	38	120	82	N/A	Pilot program scope is still being defined
Aerial Inspections Transmission (Pilot)	0	500	500	N/A	Pilot program scope is still being defined
QA Notification Gatekeeper Program	4,439	3,935	-504	HIGH	QC pilot program in 2020
QA Mapping Program	1,286	1,843	557	HIGH	QC pilot program in 2020
Total	34,391	28,767	-5,624		

ASD Observations

ASD Audit Findings	ASD Due Date	Status	Action
Ensure QC of Difficult-to-Access Structures (Y19-51130)	12/13/2019	Complete	Updated sampling/scoping process
Contractor Oversight - QC Sample Methodology (Y19-51110)	05/29/20	Complete	Developed datamart to provide visibility of all completed work, and allow for random sampling
Contractor Oversight - QC of Tier 2 Contractors (Y19-51110)	05/29/20	Complete	All contractor work visible in datamart
Data Management Limitations Result in Inspection Photos Being Deleted from Inspection Records Before the End of the Record Retention Period (Y20-51050 Observation 2)	2/26/2021	Complete	Retention procedure updated
Implement QC Program for Transmission Detailed Inspections (Y20-53060 Observation 3.1)	4/30/2021	Complete	QC program implemented
No Process Exists for Correcting Adverse Program Trends (Y20-51050 Observation 1)	4/30/2021	Complete	Implemented CAP program
QC is Focused Heavily on Addressing Wildfire Risk – Future Inspections Should Fold in Other Risk Areas (Y20-51050 Observation 3)	6/25/2021	Complete	Resume lower risk programs in 2021
QC Distribution Construction Inspections are Compromised by Process and Task Inefficiencies (Y20-51050 Observation 4)	6/25/2021	In Progress	Under Evaluation
Procedures Do Not Reflect Current Work Practices (Y20-51050 Observation 5)	6/25/2021	Complete	Quality procedures updated
Inspection Results Reviews Should Include “Passing” Inspections to Ensure Overall Inspection Quality (Y20-51050 Observation 6)	6/25/2021	Complete	Quality procedures updated
Insufficient Controls for Quality Assurance of Compliance Records (Y20-53110 Observation 2 for Vegetation Management)	8/27/2021	In Progress	Under Evaluation

Additional QC audits by ASD planned for 2021 (Dist. Inspections, Contractor Oversight, Veg. Management)

Quality Program Process Improvement Initiatives

Completed:

- Updated program requirements and documentation
- Developed Quality Dashboard and expanded reporting capabilities
- Revised Quality Program Ranking Methodology and Reassessed all Quality Programs

Pending:

- Integration of Technosylva data
- Dashboard and reporting enhancements
- System and Technology upgrades to quality platform

2022:

- Quality Program Refresh with ERM/AMSE
 - Compressing the timeline between work completion and QC inspection
 - Develop ability to dynamically adjust for system risk with changing conditions
 - Continue to refine and adjust sampling methodology
 - Establish stronger connection to asset engineering failure analysis
- Continue to expand QC Programs across the T&D Asset Lifecycle (currently on pause)

Appendix

Energy for What's AheadSM



Action to Improve Program Operations and Performance

Increase Visibility of Conformance Rates

- Holding monthly meetings with stakeholders to review QC performance results and dashboard
 - T&D SLT
 - Distribution meetings include RPPM, Regional Construction Manager, SLT Performance meeting, District Manager Core Team
 - Transmission SLT Performance meeting
 - Vegetation contractors
- Business Lines receive monthly emails with Quality results and links to Quality Dashboard

Quality Program Ranking Update

- Rankings for all Quality programs using updated program ranking methodology was reviewed with ERM and AMSE
- Updating QC program scoping targets for 2021 based on updated program rankings and conformance rates
- Working with AMSE to update REAX with Technosylva for structure-level risk categories

Corrective Action Program (CAP)

- Launched program with article in [T&D E-Wire \(Jan/Feb 2021\)](#) promoting the new CAP program
- Received 18 requests for evaluation: 4 requests have been completed, 9 are pending, and 5 have been transferred for continuous improvement evaluation
- A total of 9 corrective actions have been created and issued through the critical action item tracker for remediation
- New CAP request was submitted for top finding under the QC of Distribution Construction program - incorrect installation of insulators
 - Issue represents 50% of the distribution construction QC program findings from October to March
 - Pending CAP assessment

ERM Observations

- Since the 2019 development of the Quality Management Plan, ERM has worked with Quality on risk ranking criteria for programs, risk-informed sampling methodologies, and actionable corrective action plans.
- As ERM engagement with Quality continues, specific focus will be needed around:
 - **Compressing the timeline between work completion and QC inspection** while improving technology and process around scope availability (dependent on operations for the population of sampling data)
 - Program needs to develop ability to **dynamically adjust for system risk** with changing conditions (e.g., increased ignitions/events outside the sampling, Areas of Concern, emerging safety risks, etc.)
 - Continue to **check and adjust sampling methodology** to ensure balance between precision accuracy (e.g., focus on number of inspections vs. thoroughness).
 - A **sampling rate sensitivity analysis** is needed to determine sampling rate impact of inputs like non-conformance rate
 - High Risk Components list must be continually monitored and updated i.e., **more robust link to engineering failure analysis and recent ignition events**

Overview

Key & Secondary Risks

- **Key Enterprise Risks:** Catastrophic Wildfire, Contact with Energized, Safety Incidents, Data and Records Accuracy
- **Secondary Enterprise Risks:** Aging Infrastructure, Transmission Asset Failure, Underground Equipment Failure, Contract Management

Continuous Improvement & Program Roadmap

- Supporting **2021 audits** (Dist. Inspections, Contractor Oversight, Veg. Management) and prioritize findings
- Supporting the upcoming **ASD/ERM assurance mapping** project outlining the SCE lines of defense (LOD)
- Specific focus on quality finding and CAP program **feedback loops** including accountability, resolution verification, timelines, trending, and clear governance
- Clear organizational design with success measurements, technology improvements & maturity model