Item 4.1: Projects and Technology Update

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Technology and Security Committee Meeting

ERCOT Public
April 22, 2024

Highlights

- Shortened Site Failover to a single-day event instead of 4 days in 2024

  – March was the 2nd of these single-day Site Failovers

  – Applying Lessons learned in additional automation and optimizing the duration

- ERCOT Developer Portal (developer.ercot.com) went live

- Our projects are generally on track with normal project ups & downs

Key Takeaway: Continuing to maintain tech health and enhance our systems

2024 Project Delivery

	Feb	Apr
YTD Projects Initiated	4	10
YTD Projects Closed	2	11
Number of Projects Worked	62	68
Number of Active Projects	60	58
Total of Active Project Budgets	$167M	$128M

- S <$100k
- M $100k-$500k
- L $500k-$1M
- XL >= $1M
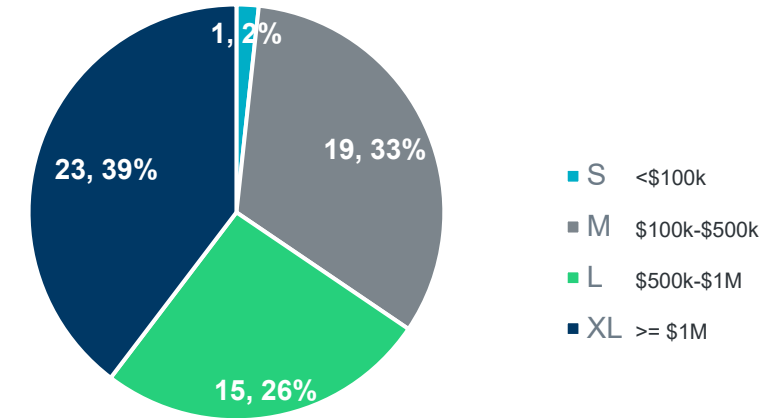
Active Project Budget	Actuals (Feb)	Actuals (Apr)	Forecast (Feb)	Forecast (Apr)
Internal Labor	18.1M	17.6M	30.4M	25.7M
Contract Labor	4.5M	4.3M	1.4M	1.3M
Vendor	16.6M	12.4M	7.0 M	6.7M
H/W, S/W	53.0M	22.1M	26.6M	25.7M
Other	2.4M	2.4M	4.0M	4.5M
Total	94.6M	59.0M	69.3M	68.3M

Key Takeaway: We are managing a healthy volume of projects with no issues to report

Project Labor Hours – 2023/2024
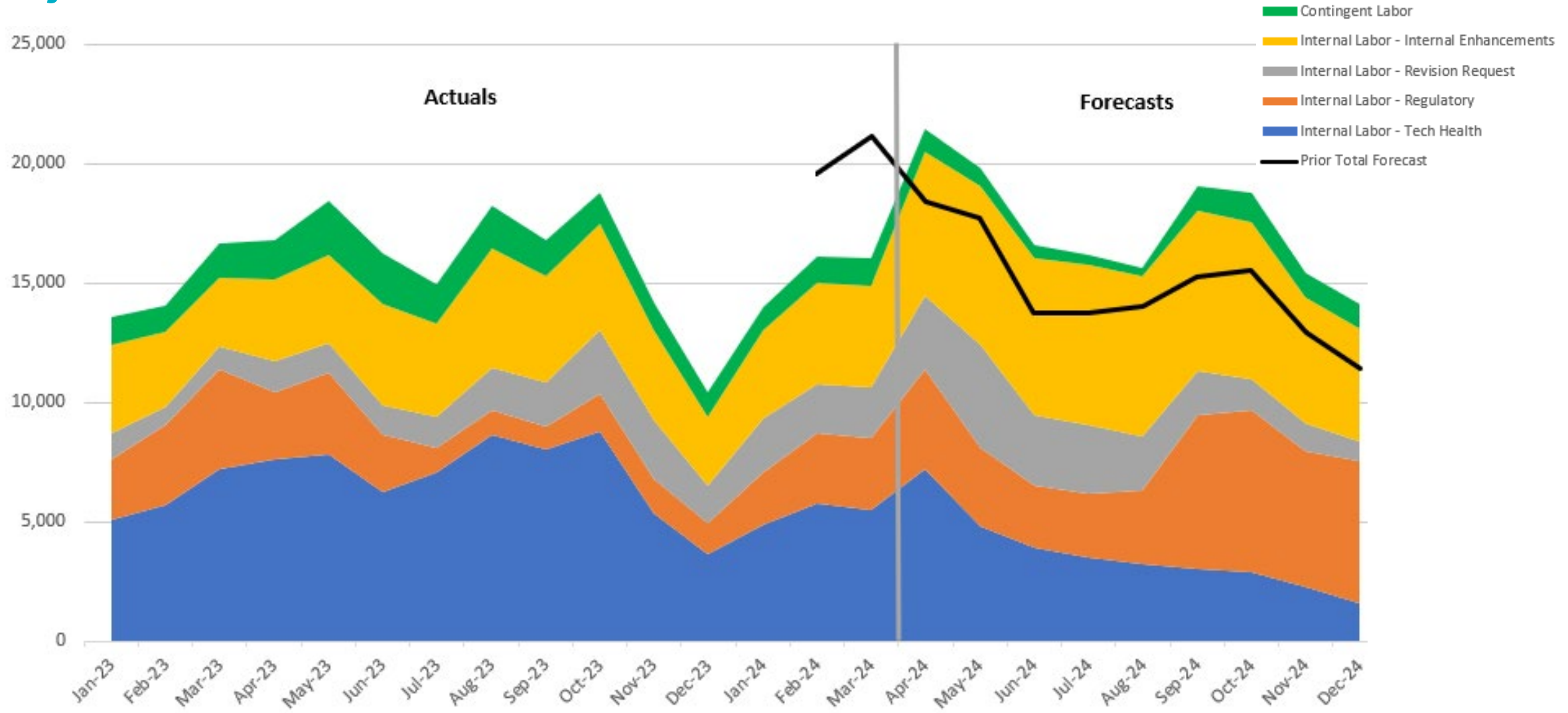
Key Takeaway: We have ramped up this Quarter and will continue to Summer

ERCOT Application Release this cycle

Application Release R3, R4 (March, April)

- PR455-01 – ERCOT Developer Portal

- PR411-01 – NPRR1040 Compliance Metrics for AS Responsibility

- PR454-01 – NPRR1026 BESTF-7 Self-Limiting Facilities

- PR399-01 – Treasury Management System

- PR427-01 – Tech Refresh – MMS Operating System Migration

Key Takeaway: Continuing to maintain tech health and enhance our systems

ERCOT Application Release next cycle

Application Release R5, R6 (May, June)

- PR422-01 – Weatherization and Inspection Service Management

- PR404-01 – GridGeo Blackstart - Advanced OTS

- PR464-01 – Securitization Phase 2b

- PR451-01 – NPRR1149, NPRR1121, NPRR1090, NPRR962

- PR453-01 – NPRR1186 Implementation consideration of ESR SOC in ERCOT tools and studies

**Key Takeaway:** Continuing to maintain tech health and enhance our systems

MMS/OS Tech Refresh Improvements

- **DAM**
  - Runtime performance improvement was between 30-40%
  - Number of iterations either reduced by 1 or remained the same

- **DRUC/HRUC**
  - Average performance improvement was about 45%

- **SCED**
  - Time for completion is 6-7 seconds (current production takes 10 seconds)

Key Takeaway: Significant performance improvements with the move to newer Linux platform

Weatherization Customer Service Management (wCSM)

Available on a new "ERCOT Weatherization & Inspection Market Participant Portal"
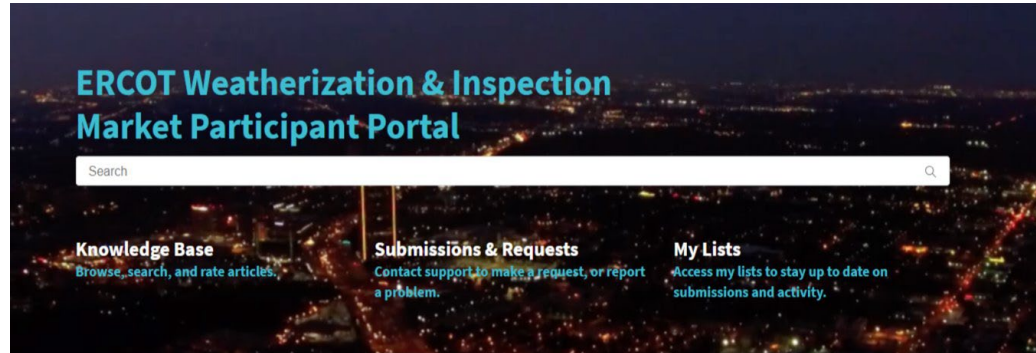
One-stop shop for:
- preparing summer Declarations of Weather Preparedness
- responding to Notices of Inspection,
- reporting on compliance deficiency resolution efforts,
- retrieving inspection reports, and
- interacting with ERCOT Weatherization & Inspection staff

- **Recent Activities**
  - Access Authorization utilizing Digital Certificates and defined Weatherization Roles
  - 3/18 – 3/22, Beta Testing with Weatherization Team and small group of Weatherization Market Participants

- **In-flight Activities**
  - 4/11- 4/25, Training Workshops with Weatherization Contacts

- **Go Live**
  - 5/1 – Go Live, Weatherization Market Participants

Key Takeaway: Many features for Market Participants to interact with Weatherization Team

Production Incident - CRR Auction Performance Issue

- **Incident Summary**
  - CRR long-term auction sequence started on 03/22/2024 11:14 AM and completed on 4/6/2023 at 1:52 pm.
  - Normal execution duration is around **72** hours. This execution took **362** hours.
  - Auction posting deadline of 04/04/2024 published in CRR Activity Calendar was missed.
  - CRR long-term auction sequences performance issue started from this year January though there is no significant increase in submitted transactions, but last two long-term auctions sequences were completed and posted within Protocol timelines.

- **Root Cause**
  - Though actual root cause is not known yet, auction is trying to solve very large number of violations and is still under investigation by vendor. This could indicate a problem with the data.
  - Vendor is re-running same auction with previous versions of CRR engine to rule out any recent software change.

- **Next Steps**
  - Vendor is actively working on few CRR engine software changes to improve performance.
  - ERCOT to increase CRR engine servers' CPUs and configure CRR engine to use more CPUs from next auction execution (4/19) which may result in around 15% improvement in performance.
  - We will investigate if hardware upgrades/cloud can buy us some relief.
  - ERCOT to look at other vendors in this space, issue RFP and do a Proof of Concept with them to see if any vendor meets our CRR requirements.

**Key Takeaway:** CRR engine taking much longer to complete. Root cause under investigation.

Appendix

Acronyms used in this slide deck

YTD	Year to date
H/W	Hardware
S/W	Software
AS	Ancillary Services
GMS	Generation Management System
BESTF	Battery Energy Storage Task Force
MMS	Market Management System
OTS	Operator Training System
ESR	Energy Storage Resource
SOC	State of Charge
DAM	Day Ahead Market
DRUC	Day-Ahead Reliability Unit Commitment
HRUC	Hour-Ahead Reliability Unit Commitment
CRR	Congestion Revenue Rights
CPU	Central Processing Unit

Metrics on Recent Projects

- **TMS**
  - Invoice matching rate = 96%

- **Public API**
  - Number of registered users = 663
  - Site UI traffic = 5.2K views/month
  - Site API traffic = 7.9M requests/month
  - Site unique visitors = 1.1K users

- **Developer Portal**
  - Site traffic = 5.8K views/month
  - Site unique visitors = 498 users

Forecast Labor Hours – April 2024
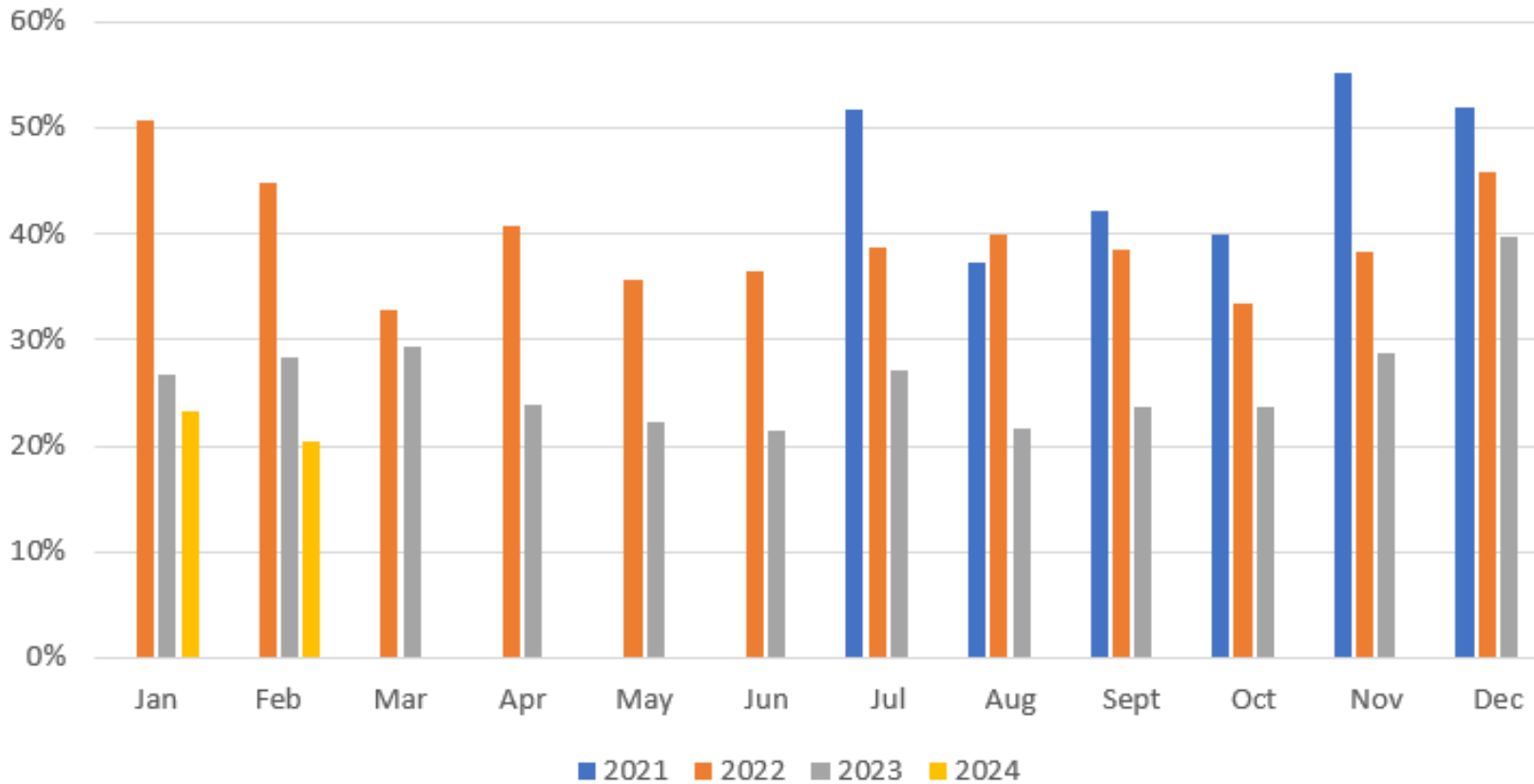

Project Hours ■   **O&M Hours** ■
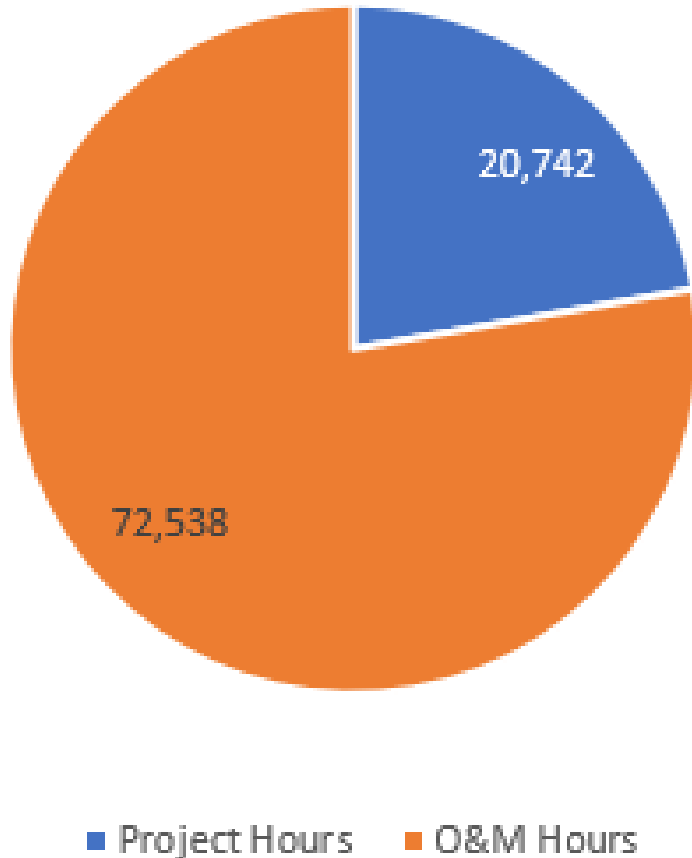
Statistics

- Chart includes departments with meaningful project forecasts in April
  - 530 staff members in 98 departments
    - 78% O&M
    - 22% project
- Not included in chart
  - Remaining 414 staff members in 89 departments
    - These staff members are 99.9% O&M

Internal Labor Forecast vs. Actuals

Variance Comparison by Month

Project Labor Hours – 2023/2024 - Slide from Feb. meeting