



## **Item 4: Discussion of 2020-2021 Biennial Budget Assumptions**

*Sean Taylor*  
Controller

Finance & Audit Committee Meeting

ERCOT Public  
April 8, 2019

# 2020-2021 Budget and Fee Requirements

## ERCOT Bylaw Requirement

- Sections 4.10 (Duties) and 10.3 (Budget): It is the duty of the ERCOT Board to approve the budget.

## Finance & Audit Committee Charter Requirement

- With respect to budget oversight...
  - Annually or biennially, the Committee shall review staff's proposed budget for the following year(s).
  - The Committee shall review the staff's recommendation of the amount and type of financing needed, both revenue and debt financing, to support the proposed budget and meet the Company's liquidity needs.
  - Following the Committee's review of the above items, the Committee shall recommend to the Board, a proposed budget and associated financing plan for the following year(s).

**Today is DISCUSSION only. The vote request will be at the June meeting.**



# Agenda

1. Overview of the Budget Process
2. Budget Request Drivers
  - Maintain Flat Fee
  - Incorporate Key Initiatives and New Demands
  - Comply with Board's Debt Strategy Guidance
3. Real Time Co-optimization Project and Funding
4. Budget Request
5. Extrapolation for a Ten-Year View
6. Risks to Meeting 2020-2021 Recommended Budget
  - Higher-than-Projected Cost Inflation
  - Lower-than-Projected Load Growth
  - Lower-than-Projected Interest Income
  - Risks Summary and Mitigation

## Overview of the Budget Process

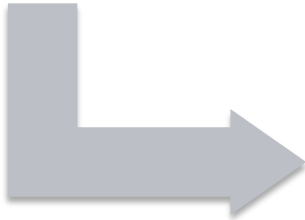
# Overview of the Budget Process

Strategic Plan

- Vision
- Mission
- Strategic Objectives

Executive Accountability:

- Review
- Challenge
- Collaborate
- Communicate



Business Plans

- Operationalize Strategic Plan
- Objectives
- Key Results

Project Budget

- PPL (Project Priority List)
- Approved initiatives and anticipated efforts



Department Budgets

- Bottom-up first cut
- Top-down review

Real Time  
Co-optimization  
Project and Funding



## Budget Request Drivers

# Budget Request Drivers: Maintain Flat Fee

## **System Administration Fee**

- Consistent Rate of \$0.555

## **Relative to 2018-2019 Approved Budget**

- Department Net Expenditures – consistent with prior projections
- Real Time Co-optimization Project – new item added
- Project Expenditures – consistent multi-year approach of approximately \$200 Million across six years, including major refreshes
- System Administration Fee Revenues – increased materially due to higher load growth
- Interest Income – increased significantly due to more Congestion Revenue Rights (CRR) auction receipts and higher interest rates



# Budget Request Drivers: Incorporate Key Initiatives and New Demands

## Strategic Plan Objectives

- Enhance operating capabilities to maintain reliability of an increasingly complex system.
- Improve information exchange to facilitate collaborative interaction.
- Advance competitive solutions for a changing industry.
- Optimize use of ERCOT, Inc.'s resources to continuously provide high-value services.



# Budget Request Drivers: Incorporate Key Initiatives and New Demands

## New Demands Include:

- Regulatory Requirements
  - IT Change Management and Configuration Management improvements for Critical Infrastructure Protection (CIP) Compliance
  - Emergency Operations Plans for Reliability Standards
- Protocol and Planning Revisions
  - Stability Assessments for interconnecting generation
  - Voltage Set Point Communications
  - Interconnection Study Increases
- System Improvements to better manage ERCOT business and an increasingly complex grid
  - System Grid Geospatially (Grid Geo) Viewed Program
  - Enterprise Content Alignment Program (ECAP) Taxonomy and Governance



# Budget Request Drivers: Incorporate Key Initiatives and New Demands

## Efficiency Savings Help Offset Costs of New Demands

- CRR Changes and Improvements
  - 3-year CRR auction increased workload
  - CRR Framework Upgrade created efficiencies
- Statistical Analysis System (SAS) Technical Architecture Redesign
  - System support labor increased
  - Hardware cost and maintenance decreased
- Transmission Planning Revisions
  - Sub-Synchronous Resonance studies increase workload
  - Increasing the Regional Planning Group (RPG) review threshold reduces workload

# Budget Request Drivers: Comply with Board's Debt Strategy Guidance

## **Maintain or Improve ERCOT's Financial Integrity**

- Continue to decrease outstanding debt and increase liquidity.

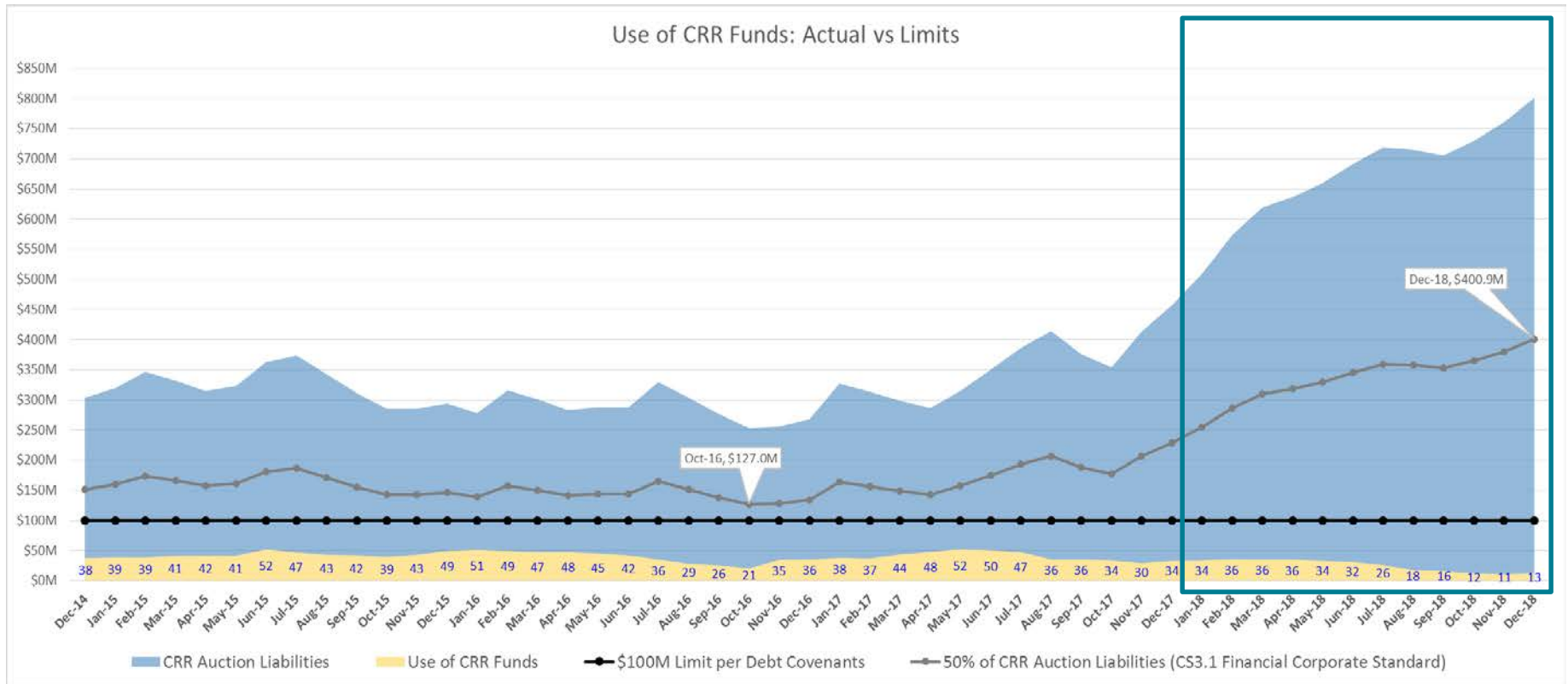
## **Maintain Stable, Fair and Predictable Fees**

- Use debt matching appropriately.

## **Provide Lowest Cost to Fee-Payers**

- Use lowest cost debt that is available and appropriate.

# Budget Request Drivers: Comply with Board's Debt Strategy Guidance



*Use of CRR Funds (CRR Borrowings) =  
Amount Owed to Market Participants - Cash and Bond Investments*



## Real Time Co-optimization Project and Funding

# Real Time Co-optimization Project and Funding

PUCT Project Nos. 48551, 48539 and 48540,  
Chairman Walker's Memorandum (Jan. 17, 2019)

## *Real Time Co-optimization*

I believe real time co-optimization brings not only economic benefits that exceed its costs, but operational benefits for ERCOT as well. These benefits and costs were discussed in detail by ERCOT and the IMM in filings made on June 29, 2018. After consideration of the information provided by ERCOT, the IMM, and the many parties that commented on the issue, I propose that the Commission instruct ERCOT to proceed with the implementation of real time co-optimization. If the Commission determines that real time co-optimization should be implemented, then there are additional issues that must be addressed either by the Commission or in the stakeholder process before ERCOT can move forward with implementation.

If the Commission decides to implement real time co-optimization, then I propose having the Commission Staff bring back to the Commission on February 7<sup>th</sup> a list of policy issues that can be published for stakeholder comment. I also propose requesting that ERCOT submit a high-level implementation plan and timeline, so that the Commission can determine the expectations for timing and milestones during the implementation of the project. Lastly, I propose that the project be funded through the favorable variance in the revenues that occurred in 2018 and will likely occur in 2019 by ERCOT. Such funds should be set aside for future use for this project.



# Real Time Co-optimization Project and Funding

*\$ in Millions*

<b>Favorable Financial Variances</b>	<b>2018</b>		<b>2019</b>	<b>Total</b>
	<b>Preliminary Actual</b>	<b>Forecast</b>		
System Administration Fee Revenues	\$ 8.1	\$ 6.1	\$ 14.1	
Department Net Expenditures	8.4	0.9	9.4	
Project Expenditures	(11.8)	8.1	(3.7)	
Debt Service	0.6	0.2	0.8	
Interest Income	11.8	18.7	30.5	
<b>Available for Real Time Co-optimization Project</b>	<b>\$ 17.1</b>	<b>\$ 34.0</b>	<b>\$ 51.1</b>	

Schedule may not foot due to rounding.



# Real Time Co-optimization Project and Funding

## Statement of Financial Position Reporting

\$ in Millions

	Pre RTC	2018-2019 Favorable Variance	Adjusted for Variance	\$35 M RTC Assets Addition	Adjusted for Asset Add	\$5 M RTC Direct Expense	Adjusted for Direct Expense	Depreciate RTC Assets	Post RTC
<b>Assets</b>									
Unrestricted cash	\$ 791.3		\$ 791.3	\$ (35.0)	\$ 756.3	\$ (5.0)	\$ 751.3		\$ 751.3
Bond investments	100.2		100.2		100.2		100.2		100.2
Total unrestricted cash and bond investments (a)	891.5		891.5	(35.0)	856.5	(5.0)	851.5		851.5
Restricted cash	458.5		458.5		458.5		458.5		458.5
Other current assets	36.5		36.5		36.5		36.5		36.5
Other long term assets	143.2		143.2	35.0	178.2		178.2	(35.0)	143.2
Total assets	\$1,529.7		\$1,529.7	\$ -	\$ 1,529.7	\$ (5.0)	\$ 1,524.7	\$ (35.0)	\$1,489.7
<b>Liabilities and Net Assets</b>									
CRR auction liabilities-current	\$ 498.3		\$ 498.3		\$ 498.3		\$ 498.3		\$ 498.3
CRR auction liabilities-long term	303.4		303.4		303.4		303.4		303.4
Other market liabilities	102.5		102.5		102.5		102.5		102.5
Total market settlement liabilities (b)	904.2		904.2		904.2		904.2		904.2
Security deposits	458.5		458.5		458.5		458.5		458.5
Other current liabilities	25.5		25.5		25.5		25.5		25.5
Other long term liabilities	51.2		51.2		51.2		51.2		51.2
2018-2019 Favorable Variance		51.1	51.1	(35.0)	16.1	(5.0)	11.1		11.1
Other net assets	90.3	(51.1)	39.2	35.0	74.2		74.2	(35.0)	39.2
Total net assets without donor restrictions	90.3	-	90.3	-	90.3	(5.0)	85.3	(35.0)	50.3
Total liabilities and net assets	\$1,529.7	\$ -	\$1,529.7	\$ -	\$ 1,529.7	\$ (5.0)	\$ 1,524.7	\$ (35.0)	\$1,489.7
CRR Borrowings [(b)-(a)]	\$ 12.7	\$ -	\$ 12.7	\$ 35.0	\$ 47.7	\$ 5.0	\$ 52.7	\$ -	\$ 52.7

**Note:** These numbers are for discussion purposes only.





## Budget Request

# Budget Request: Management Recommended Flat Fee (\$0.555)

\$ in Thousands, except rates

Budget Summary									
Line	2018 Actual*	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
1	\$ 0.5550	\$ 0.5550	\$ 0.5550	\$ 0.5550	\$ 0.5550	\$ 0.5550	\$ 0.5550	\$ 0.5550	\$ 0.5550
2	378,163	373,739	384,713	401,153	413,107	425,665	437,595	450,426	461,025
3	\$ 209,881	\$ 207,425	\$ 213,516	\$ 222,640	\$ 229,274	\$ 236,244	\$ 242,865	\$ 249,986	\$ 255,869
4	\$ 156,616	\$ 168,649	\$ 167,710	\$ 175,215	\$ 181,085	\$ 187,262	\$ 194,388	\$ 201,023	\$ 208,564
5	40,325	28,500	20,400	29,000	29,000	27,250	42,650	38,850	31,250
6	-	-	-	3,000	5,000	12,000	10,000	10,000	-
7	\$ 196,941	\$ 197,149	\$ 188,110	\$ 207,215	\$ 215,085	\$ 226,512	\$ 247,038	\$ 249,873	\$ 239,814
8	\$ 12,940	\$ 10,277	\$ 25,406	\$ 15,424	\$ 14,189	\$ 9,733	\$ (4,173)	\$ 114	\$ 16,055
9	\$ (5,430)	\$ (5,997)	\$ (5,837)	\$ (5,683)	\$ (5,531)	\$ (5,340)	\$ (5,007)	\$ (5,010)	\$ (5,170)
10	13,091	1,300	20,000	20,000	20,000	20,000	20,000	20,000	20,000
11	\$ 7,661	\$ (4,697)	\$ 14,163	\$ 14,317	\$ 14,469	\$ 14,660	\$ 14,993	\$ 14,990	\$ 14,830
12	\$ 20,601	\$ 5,580	\$ 39,568	\$ 29,741	\$ 28,657	\$ 24,392	\$ 10,820	\$ 15,104	\$ 30,885
<b>Year-End Balances: Notes Payable, CRR Borrowings, Cash, and Real Time Co-optimization Project Funding</b>									
	2018 Actual*	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
13	\$ 55,000	\$ 51,000	\$ 51,000	\$ 47,000	\$ 43,000	\$ 39,000	\$ 35,000	\$ 31,000	\$ 27,000
14	\$ 12,639	\$ 7,059	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
15	\$ -	\$ -	\$ 26,930	\$ 56,671	\$ 85,328	\$ 109,720	\$ 120,540	\$ 135,644	\$ 166,528
16	\$ 17,103	\$ -	\$ 51,092	\$ 48,092	\$ 43,092	\$ 31,092	\$ 21,092	\$ 11,092	\$ 11,092

\* Preliminary

Schedule may not foot due to rounding.



# Budget Request: Management Recommended Flat Fee (\$0.555)

\$ in Thousands

Sources and Uses		2018	2019	2019	2020	2021	2022	2023	2024	2025
		Actual**	Budget	Forecast	Request	Request	Projection	Projection	Projection	Projection
1	System Administration Fee Revenues	\$ 209,881	\$ 207,425	\$ 213,516	\$ 222,640	\$ 229,274	\$ 236,244	\$ 242,865	\$ 249,986	\$ 255,869
2	Reliability Organization Assessment *	16,328	15,000	18,947	19,800	19,800	19,800	19,800	19,800	19,800
3	Interest Income	13,091	1,300	20,000	20,000	20,000	20,000	20,000	20,000	20,000
4	Other Revenues	5,630	4,287	6,462	5,871	6,083	6,235	6,391	6,544	6,695
5	<b>Total Sources</b>	<b>\$ 244,929</b>	<b>\$ 228,012</b>	<b>\$ 258,924</b>	<b>\$ 268,311</b>	<b>\$ 275,157</b>	<b>\$ 282,279</b>	<b>\$ 289,056</b>	<b>\$ 296,330</b>	<b>\$ 302,363</b>
6	Department Expenditures	\$ 162,246	\$ 172,936	\$ 174,172	\$ 181,087	\$ 187,168	\$ 193,496	\$ 200,779	\$ 207,567	\$ 215,258
7	Project Expenditures	40,325	28,500	20,400	32,000	34,000	39,250	52,650	48,850	31,250
8	Reliability Organization Assessment *	16,328	15,000	18,947	19,800	19,800	19,800	19,800	19,800	19,800
9	Debt Service	5,430	5,997	5,837	5,683	5,531	5,340	5,007	5,010	5,170
10	Repayment of CRR Borrowings	20,601	5,580	12,639	-	-	-	-	-	-
11	Increase in Cash Balance	-	-	26,930	29,741	28,657	24,392	10,820	15,104	30,885
12	<b>Total Uses</b>	<b>\$ 244,929</b>	<b>\$ 228,012</b>	<b>\$ 258,924</b>	<b>\$ 268,311</b>	<b>\$ 275,157</b>	<b>\$ 282,279</b>	<b>\$ 289,056</b>	<b>\$ 296,330</b>	<b>\$ 302,363</b>

\* Reliability Organization Assessment is a pass-through collected on behalf of the Texas Regional Entity; it is not set by ERCOT.

\*\* Preliminary

Schedule may not foot due to rounding.



# Budget Request: Comparison to 2018-2019 Approved Budget Debt, CRR Borrowings, and Cash Balances at End of Year 2025

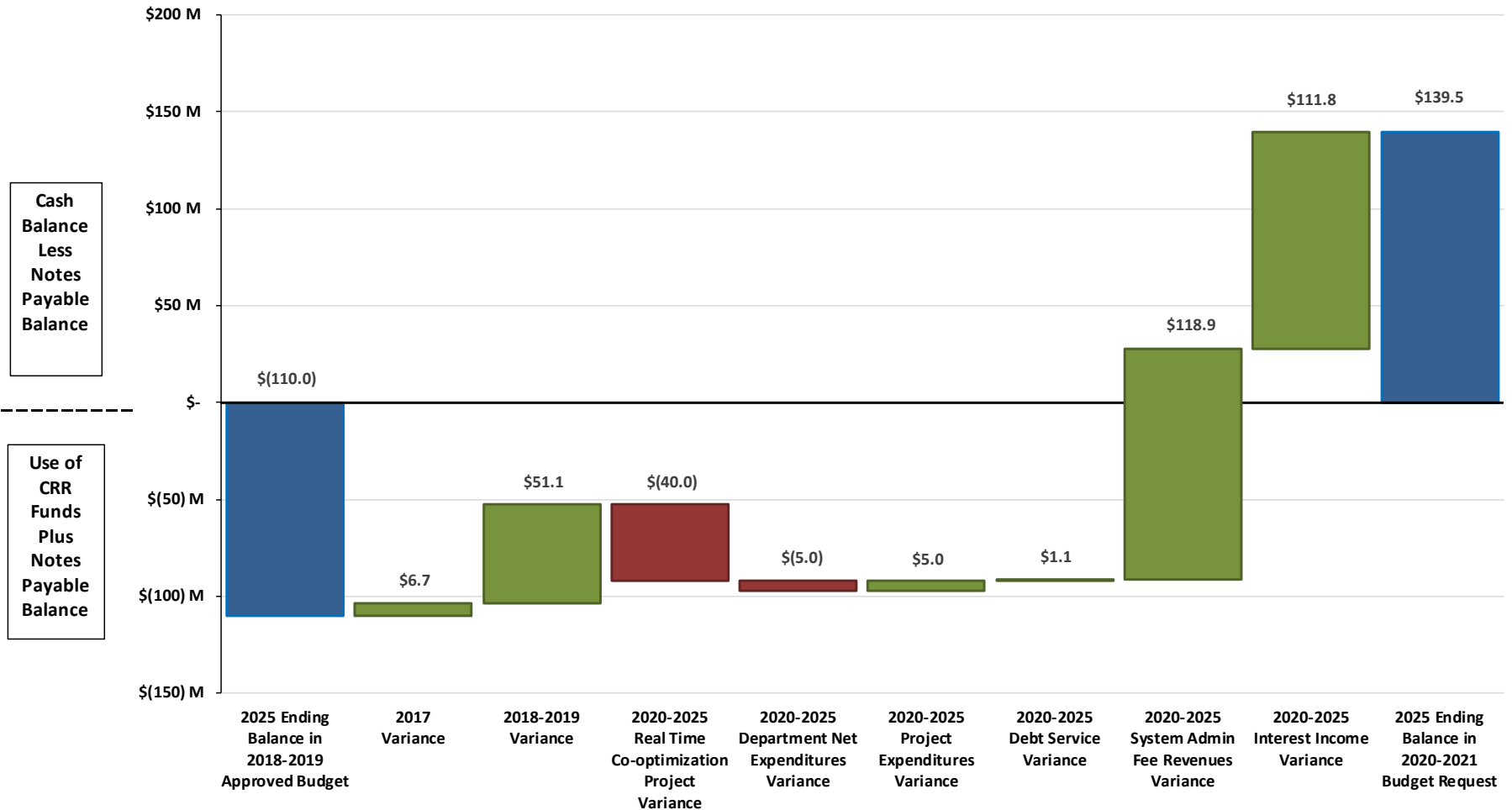


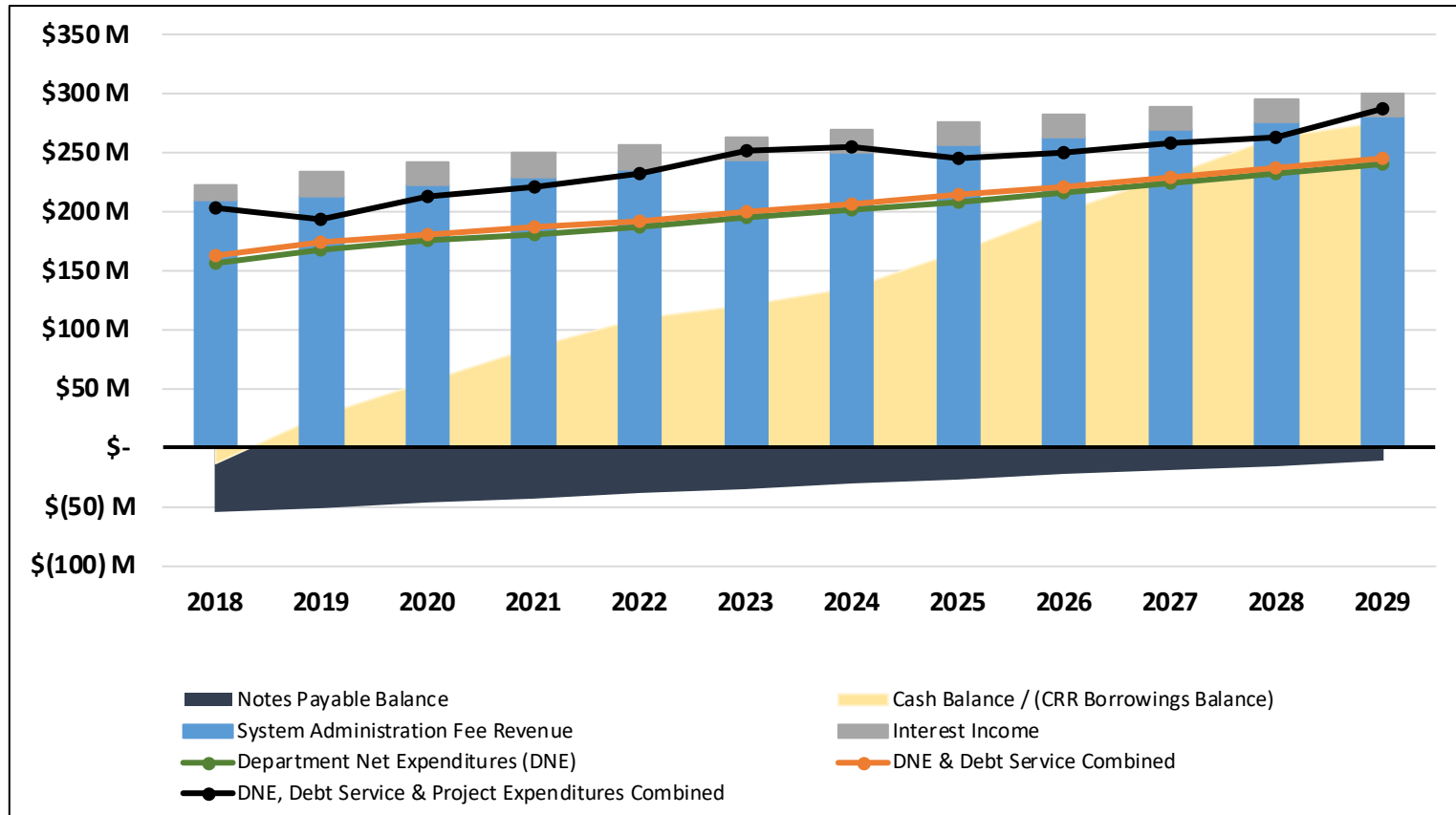
Chart may not foot due to rounding.



## Extrapolation For a Ten-Year View

*NOTE: Future values are extrapolated based on current assumptions; this is not a recommendation.*

# Extrapolation for a Ten-Year View: Annual Sources and Uses and Cumulative Debt, CRR Borrowings and Cash Balances

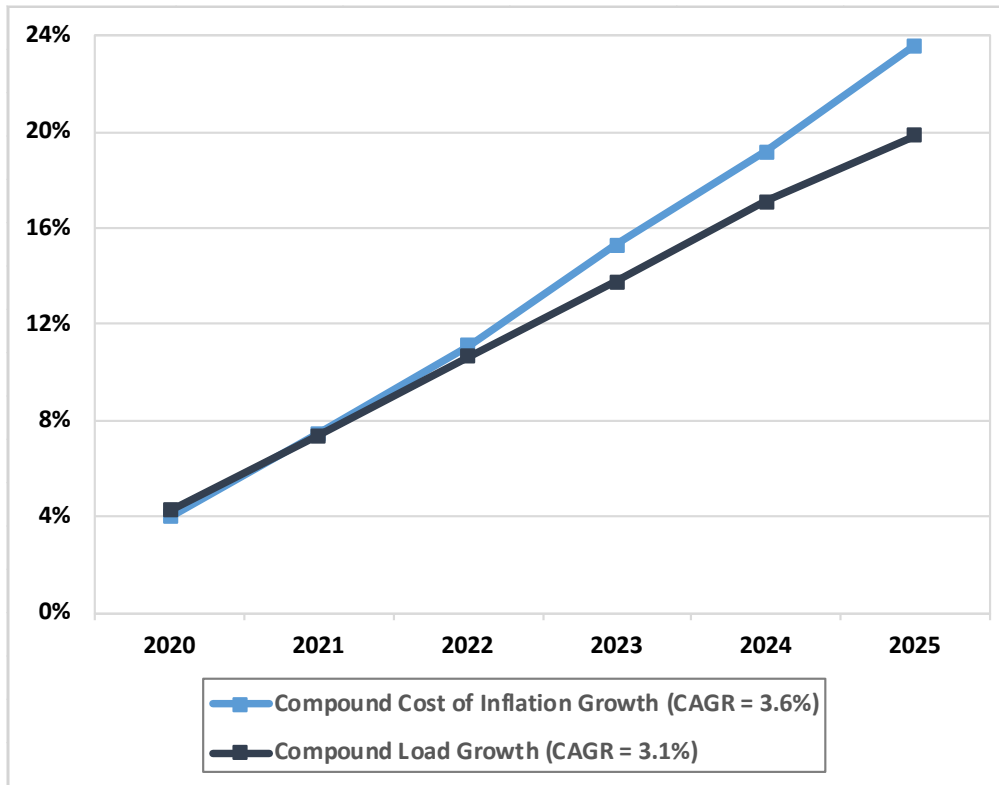


NOTE: Future values are **extrapolated** based on current assumptions; this is not a recommendation.



## Risks to Meeting 2020-2021 Recommended Budget

# Risks to Meeting 2020-2021 Recommended Budget: Higher-than-Projected Cost Inflation & Lower-than-Projected Load Growth



*ERCOT's costs are forecast to continue to grow at a rate faster than load.*

*What is the sensitivity to ERCOT's financial health of variances to forecasts for these items?*



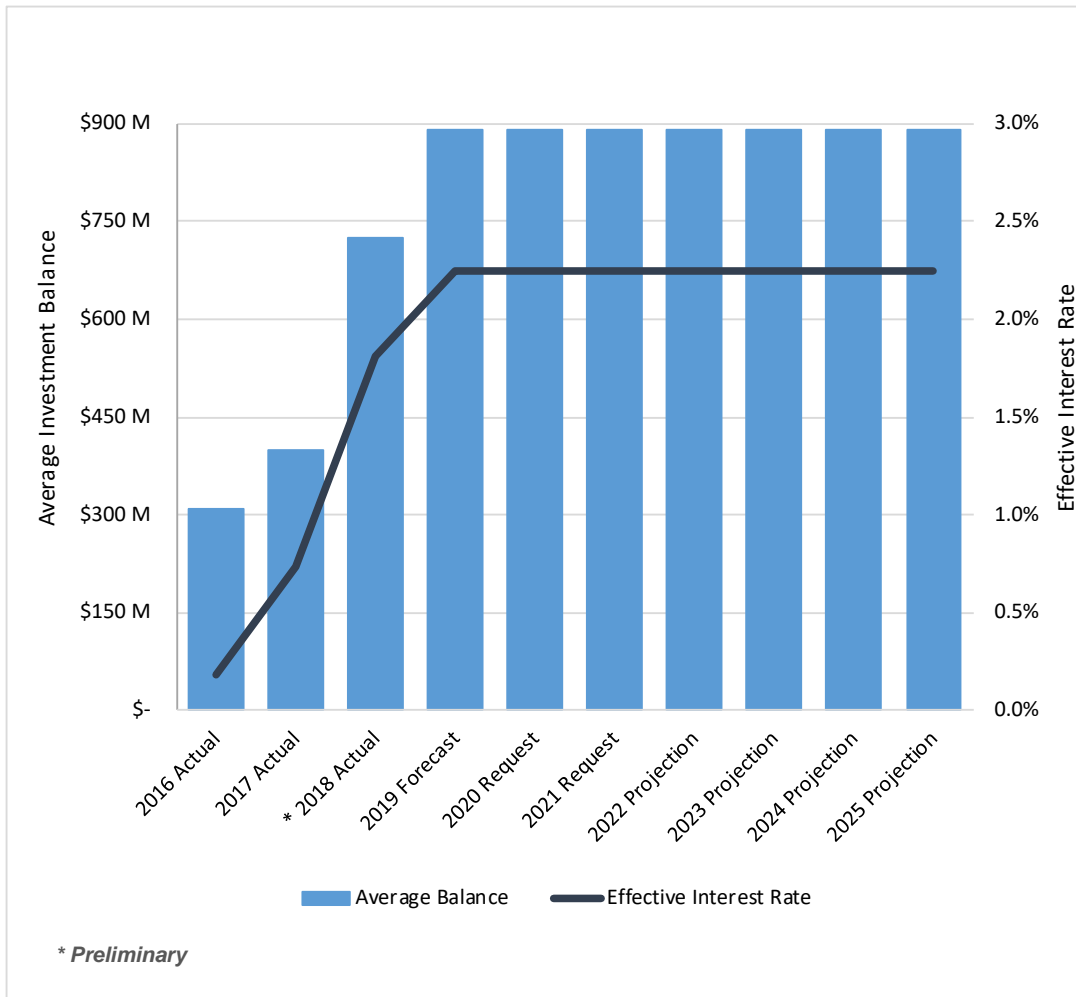
# Risks to Meeting 2020-2021 Recommended Budget: Sensitivity Analysis – Higher-than-Projected Cost Inflation & Lower-than-Projected Load Growth

## 2025 Ending Cash Balance \$ in Millions

		CAGR for Six Year Department Expenditures (2020-2025)							
		6.0%	5.0%	4.0%	3.6%	3.0%	2.0%	1.0%	
CAGR for Six Year Load Growth (2020-2025)	0.0%	\$ (81.2)	\$ (37.3)	\$ 5.1	\$ 22.0	\$ 46.2	\$ 86.0	\$ 124.4	
	1.0%	\$ (35.6)	\$ 8.3	\$ 50.7	\$ 67.6	\$ 91.8	\$ 131.5	\$ 170.0	
	2.0%	\$ 11.6	\$ 55.4	\$ 97.9	\$ 114.7	\$ 138.9	\$ 178.7	\$ 217.1	
	3.1%	\$ 63.3	\$ 107.2	\$ 149.6	<b>\$ 166.5</b>	\$ 190.7	\$ 230.5	\$ 268.9	
	4.0%	\$ 110.6	\$ 154.5	\$ 196.9	\$ 213.8	\$ 238.0	\$ 277.8	\$ 316.2	
	5.0%	\$ 162.7	\$ 206.5	\$ 249.0	\$ 265.9	\$ 290.0	\$ 329.8	\$ 368.2	
	6.0%	\$ 216.4	\$ 260.3	\$ 302.7	\$ 319.6	\$ 343.8	\$ 383.6	\$ 422.0	



# Risks to Meeting 2020-2021 Recommended Budget: Lower-than-Projected Interest Income



*Interest rates and CRR balances are outside of our control.*

*What is the sensitivity to ERCOT's financial health of variances to forecasts for these items?*



# Risks to Meeting 2020-2021 Recommended Budget: Sensitivity Analysis – Lower-than-Projected Interest Income

## 2025 Ending Cash Balance \$ in Millions

		Average Investment Balance (2020-2025)									
		\$ 300	\$ 500	\$ 700	\$ 890	\$ 1,100	\$ 1,300	\$ 1,500			
Average Interest Rate (2020-2025)	0.75%	\$ 59.9	\$ 68.9	\$ 77.9	\$ 86.4	\$ 95.9	\$ 104.9	\$ 113.9			
	1.25%	\$ 68.9	\$ 83.9	\$ 98.9	\$ 113.1	\$ 128.9	\$ 143.9	\$ 158.9			
	1.75%	\$ 77.9	\$ 98.9	\$ 119.9	\$ 139.8	\$ 161.9	\$ 182.9	\$ 203.9			
	2.25%	\$ 86.9	\$ 113.9	\$ 140.9	\$ 166.5	\$ 194.9	\$ 221.9	\$ 248.9			
	2.75%	\$ 95.9	\$ 128.9	\$ 161.9	\$ 193.2	\$ 227.9	\$ 260.9	\$ 293.9			
	3.25%	\$ 104.9	\$ 143.9	\$ 182.9	\$ 219.9	\$ 260.9	\$ 299.9	\$ 338.9			
	3.75%	\$ 113.9	\$ 158.9	\$ 203.9	\$ 246.6	\$ 293.9	\$ 338.9	\$ 383.9			



# Risks to Meeting 2020-2021 Recommended Budget: Risks Summary and Mitigation

## Potential Risks

- Higher-than-Projected Cost Inflation
- Lower-than-Projected Load Growth
- Lower-than-Projected Interest Income

## Risk Characteristics

- Low Probability
- Slow Velocity

## Mitigation Responses

- Reduce Department Net Expenditures (e.g., operational efficiencies)
- Reduce Project Expenditures
- Increase Debt & ERCOT's Use of CRR Funds

## Appendices

## Department Net Expenditures by Office

# 2020-2021 Budget Request: Department Net Expenditures by Office

\$ in Thousands

ERCOT

Line		2018	2019	2019	2020	2021	2022	2023	2024	2025
		Actual (Prelim)	Budget	Forecast	Request	Request	Projection	Projection	Projection	Projection
1	Salaries	\$ 88,918	\$ 94,052	\$ 92,863	\$ 99,140	\$ 103,174	\$ 107,301	\$ 111,593	\$ 116,057	\$ 120,699
2	Benefits & Taxes	27,527	30,873	31,071	31,698	33,470	34,809	36,201	37,649	39,155
3	Project Funded Labor	(10,518)	(9,794)	(9,796)	(11,851)	(11,842)	(12,538)	(12,538)	(13,235)	(13,235)
4	Vacancy	-	(3,010)	-	(3,271)	(3,416)	(3,501)	(3,589)	(3,675)	(3,760)
5	<b>Department Labor</b>	<b>\$ 105,927</b>	<b>\$ 112,121</b>	<b>\$ 114,138</b>	<b>\$ 115,717</b>	<b>\$ 121,386</b>	<b>\$ 126,069</b>	<b>\$ 131,666</b>	<b>\$ 136,795</b>	<b>\$ 142,859</b>
6	Materials, Supplies & Equipment	661	840	842	780	801	821	842	862	882
7	HW/SW License & Maintenance	22,230	23,607	22,730	24,653	24,836	25,456	26,093	26,719	27,334
8	Outside Services	14,326	13,896	14,609	18,825	18,209	18,664	19,130	19,590	20,040
9	Utility, Maintenance & Facility	8,313	10,757	10,464	9,938	10,499	10,761	11,030	11,295	11,555
10	Employee Expenses	2,333	3,630	3,353	3,354	3,361	3,445	3,531	3,615	3,699
11	Insurance	2,222	2,804	2,800	2,423	2,534	2,598	2,663	2,726	2,789
12	Other Expenses	2,389	2,876	2,874	3,042	3,118	3,196	3,276	3,355	3,432
13	<b>Department Expense</b>	<b>\$ 158,402</b>	<b>\$ 170,531</b>	<b>\$ 171,810</b>	<b>\$ 178,731</b>	<b>\$ 184,743</b>	<b>\$ 191,011</b>	<b>\$ 198,231</b>	<b>\$ 204,958</b>	<b>\$ 212,589</b>
14	Minor Capital & Common Infrastructure	3,842	2,405	2,362	2,356	2,425	2,486	2,548	2,609	2,669
15	<b>Subtotal - Department Expenditures</b>	<b>\$ 162,244</b>	<b>\$ 172,936</b>	<b>\$ 174,172</b>	<b>\$ 181,087</b>	<b>\$ 187,168</b>	<b>\$ 193,496</b>	<b>\$ 200,779</b>	<b>\$ 207,567</b>	<b>\$ 215,258</b>
16										
17	<b>Revenues</b>	<b>\$ (5,628)</b>	<b>\$ (4,287)</b>	<b>\$ (6,462)</b>	<b>\$ (5,871)</b>	<b>\$ (6,083)</b>	<b>\$ (6,235)</b>	<b>\$ (6,391)</b>	<b>\$ (6,544)</b>	<b>\$ (6,695)</b>
18										
19	<b>Total Department Net Expenditures</b>	<b>\$ 156,616</b>	<b>\$ 168,649</b>	<b>\$ 167,710</b>	<b>\$ 175,215</b>	<b>\$ 181,085</b>	<b>\$ 187,262</b>	<b>\$ 194,388</b>	<b>\$ 201,023</b>	<b>\$ 208,564</b>

Schedule may not foot due to rounding.



# 2020-2021 Budget Request: Department Net Expenditures by Office

\$ in Thousands

Chief Information Office

Line		2018 Actual (Prelim)	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
1	Salaries	\$ 30,149	\$ 31,148	\$ 30,942	\$ 33,103	\$ 34,537	\$ 35,919	\$ 37,355	\$ 38,850	\$ 40,404
2	Benefits & Taxes	9,298	10,196	10,281	10,515	11,135	11,580	12,043	12,525	13,026
3	Project Funded Labor	(7,523)	(6,801)	(6,804)	(7,855)	(7,904)	(8,369)	(8,369)	(8,834)	(8,834)
4	Vacancy	-	(1,009)	-	(1,090)	(1,142)	(1,170)	(1,200)	(1,228)	(1,257)
5	<b>Department Labor</b>	<b>\$ 31,924</b>	<b>\$ 33,534</b>	<b>\$ 34,418</b>	<b>\$ 34,673</b>	<b>\$ 36,626</b>	<b>\$ 37,960</b>	<b>\$ 39,830</b>	<b>\$ 41,312</b>	<b>\$ 43,339</b>
6	Materials, Supplies & Equipment	130	123	137	147	155	159	163	167	171
7	HW/SW License & Maintenance	21,956	23,538	22,631	24,260	24,652	25,268	25,900	26,521	27,131
8	Outside Services	5,798	3,587	4,402	7,319	7,371	7,556	7,745	7,930	8,113
9	Utility, Maintenance & Facility	3,857	4,954	4,998	4,635	4,952	5,076	5,203	5,328	5,450
10	Employee Expenses	632	1,049	835	879	865	887	909	931	952
11	Insurance	-	-	-	-	-	-	-	-	-
12	Other Expenses	925	1,014	1,019	789	809	829	850	870	890
13	<b>Department Expense</b>	<b>\$ 65,222</b>	<b>\$ 67,799</b>	<b>\$ 68,441</b>	<b>\$ 72,701</b>	<b>\$ 75,430</b>	<b>\$ 77,734</b>	<b>\$ 80,599</b>	<b>\$ 83,060</b>	<b>\$ 86,046</b>
14	Minor Capital & Common Infrastructure	2,646	890	847	1,361	1,405	1,440	1,476	1,512	1,546
15	<b>Subtotal - Department Expenditures</b>	<b>\$ 67,868</b>	<b>\$ 68,689</b>	<b>\$ 69,288</b>	<b>\$ 74,062</b>	<b>\$ 76,835</b>	<b>\$ 79,174</b>	<b>\$ 82,075</b>	<b>\$ 84,571</b>	<b>\$ 87,593</b>
16										
17	<b>*Revenues</b>	<b>\$ (2,912)</b>	<b>\$ (2,959)</b>	<b>\$ (3,238)</b>	<b>\$ (3,187)</b>	<b>\$ (3,399)</b>	<b>\$ (3,484)</b>	<b>\$ (3,571)</b>	<b>\$ (3,656)</b>	<b>\$ (3,740)</b>
18										
19	<b>Total Department Net Expenditures</b>	<b>\$ 64,956</b>	<b>\$ 65,731</b>	<b>\$ 66,050</b>	<b>\$ 70,875</b>	<b>\$ 73,437</b>	<b>\$ 75,690</b>	<b>\$ 78,504</b>	<b>\$ 80,915</b>	<b>\$ 83,852</b>

\* Private Wide-Area Network Fees

Schedule may not foot due to rounding.





# 2020-2021 Budget Request: Department Net Expenditures by Office

\$ in Thousands

Chief Operating Office

Line		2018	2019	2019	2020	2021	2022	2023	2024	2025
		Actual (Prelim)	Budget	Forecast	Request	Request	Projection	Projection	Projection	Projection
1	Salaries	\$ 39,922	\$ 41,922	\$ 41,080	\$ 43,356	\$ 45,090	\$ 46,894	\$ 48,769	\$ 50,720	\$ 52,749
2	Benefits & Taxes	12,678	14,079	14,181	14,190	14,987	15,586	16,210	16,858	17,532
3	Project Funded Labor	(1,228)	(1,040)	(1,072)	(1,458)	(1,400)	(1,482)	(1,482)	(1,565)	(1,565)
4	Vacancy	-	(1,348)	-	(1,439)	(1,502)	(1,539)	(1,578)	(1,616)	(1,653)
5	<b>Department Labor</b>	<b>\$ 51,372</b>	<b>\$ 53,613</b>	<b>\$ 54,189</b>	<b>\$ 54,649</b>	<b>\$ 57,175</b>	<b>\$ 59,458</b>	<b>\$ 61,919</b>	<b>\$ 64,398</b>	<b>\$ 67,064</b>
6	Materials, Supplies & Equipment	112	173	165	164	167	171	176	180	184
7	HW/SW License & Maintenance	249	16	68	269	119	122	126	129	132
8	Outside Services	1,766	2,526	2,536	3,315	2,603	2,668	2,734	2,800	2,864
9	Utility, Maintenance & Facility	7	16	15	-	-	-	-	-	-
10	Employee Expenses	1,022	1,556	1,522	1,514	1,531	1,570	1,609	1,648	1,686
11	Insurance	-	-	-	-	-	-	-	-	-
12	Other Expenses	921	906	924	1,472	1,523	1,561	1,600	1,639	1,677
13	<b>Department Expense</b>	<b>\$ 55,448</b>	<b>\$ 58,805</b>	<b>\$ 59,420</b>	<b>\$ 61,384</b>	<b>\$ 63,119</b>	<b>\$ 65,551</b>	<b>\$ 68,164</b>	<b>\$ 70,792</b>	<b>\$ 73,606</b>
14	Minor Capital & Common Infrastructure	115	965	965	507	610	625	641	656	671
15	<b>Subtotal - Department Expenditures</b>	<b>\$ 55,563</b>	<b>\$ 59,770</b>	<b>\$ 60,385</b>	<b>\$ 61,891</b>	<b>\$ 63,729</b>	<b>\$ 66,176</b>	<b>\$ 68,805</b>	<b>\$ 71,449</b>	<b>\$ 74,277</b>
16										
17	<b>*Revenues</b>	<b>\$ (2,245)</b>	<b>\$ (1,020)</b>	<b>\$ (2,907)</b>	<b>\$ (2,353)</b>	<b>\$ (2,353)</b>	<b>\$ (2,412)</b>	<b>\$ (2,472)</b>	<b>\$ (2,532)</b>	<b>\$ (2,590)</b>
18										
19	<b>Total Department Net Expenditures</b>	<b>\$ 53,319</b>	<b>\$ 58,750</b>	<b>\$ 57,477</b>	<b>\$ 59,538</b>	<b>\$ 61,376</b>	<b>\$ 63,764</b>	<b>\$ 66,332</b>	<b>\$ 68,917</b>	<b>\$ 71,687</b>

\*Generation Interconnection Study Fees, Operations Training Seminar Registration Fees, & Blackstart Training Registration Fees

Schedule may not foot due to rounding.



# 2020-2021 Budget Request: Department Net Expenditures by Office

\$ in Thousands

Chief Administrative Office

Line		2018 Actual (Prelim)	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
1	Salaries	\$ 10,134	\$ 11,841	\$ 11,805	\$ 12,968	\$ 13,445	\$ 13,982	\$ 14,542	\$ 15,123	\$ 15,728
2	Benefits & Taxes	3,095	3,684	3,686	3,982	4,172	4,339	4,513	4,693	4,881
3	Project Funded Labor	(1,822)	(1,823)	(1,824)	(2,455)	(2,455)	(2,599)	(2,599)	(2,743)	(2,743)
4	Vacancy	-	(351)	-	(424)	(440)	(451)	(463)	(474)	(485)
5	<b>Department Labor</b>	<b>\$ 11,408</b>	<b>\$ 13,351</b>	<b>\$ 13,667</b>	<b>\$ 14,072</b>	<b>\$ 14,722</b>	<b>\$ 15,271</b>	<b>\$ 15,993</b>	<b>\$ 16,599</b>	<b>\$ 17,381</b>
6	Materials, Supplies & Equipment	415	537	533	461	470	482	494	506	518
7	HW/SW License & Maintenance	25	15	16	115	60	62	63	65	66
8	Outside Services	6,083	6,182	6,205	6,579	6,720	6,888	7,060	7,230	7,396
9	Utility, Maintenance & Facility	4,393	5,732	5,396	5,303	5,547	5,686	5,828	5,968	6,105
10	Employee Expenses	405	599	605	597	597	612	627	642	657
11	Insurance	2,222	2,804	2,800	2,423	2,534	2,598	2,663	2,726	2,789
12	Other Expenses	337	555	543	413	418	429	440	450	460
13	<b>Department Expense</b>	<b>\$ 25,289</b>	<b>\$ 29,775</b>	<b>\$ 29,765</b>	<b>\$ 29,963</b>	<b>\$ 31,069</b>	<b>\$ 32,026</b>	<b>\$ 33,167</b>	<b>\$ 34,186</b>	<b>\$ 35,372</b>
14	Minor Capital & Common Infrastructure	1,081	550	550	488	410	420	431	441	451
15	<b>Subtotal - Department Expenditures</b>	<b>\$ 26,370</b>	<b>\$ 30,325</b>	<b>\$ 30,315</b>	<b>\$ 30,450</b>	<b>\$ 31,479</b>	<b>\$ 32,447</b>	<b>\$ 33,598</b>	<b>\$ 34,627</b>	<b>\$ 35,823</b>
16										
17	<b>Revenues</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
18										
19	<b>Total Department Net Expenditures</b>	<b>\$ 26,370</b>	<b>\$ 30,325</b>	<b>\$ 30,315</b>	<b>\$ 30,450</b>	<b>\$ 31,479</b>	<b>\$ 32,447</b>	<b>\$ 33,598</b>	<b>\$ 34,627</b>	<b>\$ 35,823</b>

Schedule may not foot due to rounding.



# 2020-2021 Budget Request: Department Net Expenditures by Office

\$ in Thousands

External Affairs and Corporate Communications

Line		2018 Actual (Prelim)	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
1	Salaries	\$ 4,478	\$ 4,875	\$ 4,601	\$ 5,058	\$ 5,260	\$ 5,471	\$ 5,689	\$ 5,917	\$ 6,154
2	Benefits & Taxes	1,409	1,618	1,563	1,640	1,731	1,801	1,873	1,947	2,025
3	Project Funded Labor	(71)	(103)	(69)	(83)	(83)	(88)	(88)	(93)	(93)
4	Vacancy	-	(157)	-	(167)	(175)	(179)	(184)	(188)	(192)
5	<b>Department Labor</b>	<b>\$ 5,817</b>	<b>\$ 6,233</b>	<b>\$ 6,095</b>	<b>\$ 6,447</b>	<b>\$ 6,733</b>	<b>\$ 7,004</b>	<b>\$ 7,290</b>	<b>\$ 7,583</b>	<b>\$ 7,894</b>
6	Materials, Supplies & Equipment	2	4	4	4	4	5	5	5	5
7	HW/SW License & Maintenance	1	39	14	5	5	5	5	5	5
8	Outside Services	-	251	230	257	257	264	270	277	283
9	Utility, Maintenance & Facility	-	-	-	-	-	-	-	-	-
10	Employee Expenses	125	218	205	179	181	186	190	195	199
11	Insurance	-	-	-	-	-	-	-	-	-
12	Other Expenses	86	103	107	149	149	153	157	161	164
13	<b>Department Expense</b>	<b>\$ 6,031</b>	<b>\$ 6,847</b>	<b>\$ 6,654</b>	<b>\$ 7,042</b>	<b>\$ 7,330</b>	<b>\$ 7,615</b>	<b>\$ 7,917</b>	<b>\$ 8,225</b>	<b>\$ 8,550</b>
14	Minor Capital & Common Infrastructure	-	-	-	-	-	-	-	-	-
15	<b>Subtotal - Department Expenditures</b>	<b>\$ 6,031</b>	<b>\$ 6,847</b>	<b>\$ 6,654</b>	<b>\$ 7,042</b>	<b>\$ 7,330</b>	<b>\$ 7,615</b>	<b>\$ 7,917</b>	<b>\$ 8,225</b>	<b>\$ 8,550</b>
16										
17	<b>*Revenues</b>	<b>\$ (61)</b>	<b>\$ (40)</b>	<b>\$ (47)</b>	<b>\$ (63)</b>	<b>\$ (63)</b>	<b>\$ (64)</b>	<b>\$ (66)</b>	<b>\$ (67)</b>	<b>\$ (69)</b>
18										
19	<b>Total Department Net Expenditures</b>	<b>\$ 5,971</b>	<b>\$ 6,807</b>	<b>\$ 6,607</b>	<b>\$ 6,979</b>	<b>\$ 7,268</b>	<b>\$ 7,551</b>	<b>\$ 7,851</b>	<b>\$ 8,158</b>	<b>\$ 8,481</b>

\*Market Participant Registration Fees

Schedule may not foot due to rounding.



# 2020-2021 Budget Request: Department Net Expenditures by Office

\$ in Thousands

General Counsel

Line		2018 Actual (Prelim)	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
1	Salaries	\$ 2,682	\$ 2,684	\$ 2,731	\$ 2,982	\$ 3,102	\$ 3,226	\$ 3,355	\$ 3,489	\$ 3,629
2	Benefits & Taxes	725	846	863	908	957	995	1,035	1,077	1,120
3	Project Funded Labor	127	(27)	(26)	-	-	-	-	-	-
4	Vacancy	-	(86)	-	(97)	(101)	(104)	(107)	(109)	(112)
5	<b>Department Labor</b>	<b>\$ 3,533</b>	<b>\$ 3,417</b>	<b>\$ 3,568</b>	<b>\$ 3,793</b>	<b>\$ 3,957</b>	<b>\$ 4,117</b>	<b>\$ 4,283</b>	<b>\$ 4,456</b>	<b>\$ 4,637</b>
6	Materials, Supplies & Equipment	2	3	4	3	4	4	4	4	4
7	HW/SW License & Maintenance	-	-	-	4	-	-	-	-	-
8	Outside Services	680	1,350	1,236	1,355	1,257	1,289	1,321	1,353	1,384
9	Utility, Maintenance & Facility	55	55	55	-	-	-	-	-	-
10	Employee Expenses	85	102	98	113	114	117	120	123	125
11	Insurance	-	-	-	-	-	-	-	-	-
12	Other Expenses	104	265	249	198	199	204	209	214	219
13	<b>Department Expense</b>	<b>\$ 4,459</b>	<b>\$ 5,192</b>	<b>\$ 5,210</b>	<b>\$ 5,466</b>	<b>\$ 5,531</b>	<b>\$ 5,730</b>	<b>\$ 5,937</b>	<b>\$ 6,149</b>	<b>\$ 6,368</b>
14	Minor Capital & Common Infrastructure	-	-	-	-	-	-	-	-	-
15	<b>Subtotal - Department Expenditures</b>	<b>\$ 4,459</b>	<b>\$ 5,192</b>	<b>\$ 5,210</b>	<b>\$ 5,466</b>	<b>\$ 5,531</b>	<b>\$ 5,730</b>	<b>\$ 5,937</b>	<b>\$ 6,149</b>	<b>\$ 6,368</b>
16										
17	<b>*Revenues</b>	<b>\$ (411)</b>	<b>\$ (268)</b>	<b>\$ (269)</b>	<b>\$ (268)</b>	<b>\$ (268)</b>	<b>\$ (275)</b>	<b>\$ (282)</b>	<b>\$ (289)</b>	<b>\$ (296)</b>
18										
19	<b>Total Department Net Expenditures</b>	<b>\$ 4,048</b>	<b>\$ 4,924</b>	<b>\$ 4,942</b>	<b>\$ 5,198</b>	<b>\$ 5,262</b>	<b>\$ 5,455</b>	<b>\$ 5,655</b>	<b>\$ 5,860</b>	<b>\$ 6,073</b>

\*Membership Dues

Schedule may not foot due to rounding.



# 2020-2021 Budget Request: Department Net Expenditures by Office

\$ in Thousands

Chief Executive Office

Line		2018 Actual (Prelim)	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
1	Salaries	\$ 1,552	\$ 1,581	\$ 1,704	\$ 1,673	\$ 1,740	\$ 1,810	\$ 1,882	\$ 1,958	\$ 2,036
2	Benefits & Taxes	321	450	497	464	488	507	527	549	570
3	Project Funded Labor	-	-	0	-	-	-	-	-	-
4	Vacancy	-	(58)	-	(53)	(56)	(57)	(59)	(60)	(61)
5	<b>Department Labor</b>	<b>\$ 1,873</b>	<b>\$ 1,973</b>	<b>\$ 2,201</b>	<b>\$ 2,084</b>	<b>\$ 2,172</b>	<b>\$ 2,260</b>	<b>\$ 2,351</b>	<b>\$ 2,446</b>	<b>\$ 2,545</b>
6	Materials, Supplies & Equipment	0	-	-	0	0	0	0	0	0
7	HW/SW License & Maintenance	-	-	-	-	-	-	-	-	-
8	Outside Services	-	-	-	-	-	-	-	-	-
9	Utility, Maintenance & Facility	-	-	-	-	-	-	-	-	-
10	Employee Expenses	65	107	88	72	72	74	76	77	79
11	Insurance	-	-	-	-	-	-	-	-	-
12	Other Expenses	15	32	31	20	20	20	21	21	22
13	<b>Department Expense</b>	<b>\$ 1,953</b>	<b>\$ 2,112</b>	<b>\$ 2,320</b>	<b>\$ 2,176</b>	<b>\$ 2,264</b>	<b>\$ 2,354</b>	<b>\$ 2,448</b>	<b>\$ 2,545</b>	<b>\$ 2,646</b>
14	Minor Capital & Common Infrastructure	-	-	-	-	-	-	-	-	-
15	<b>Subtotal - Department Expenditures</b>	<b>\$ 1,953</b>	<b>\$ 2,112</b>	<b>\$ 2,320</b>	<b>\$ 2,176</b>	<b>\$ 2,264</b>	<b>\$ 2,354</b>	<b>\$ 2,448</b>	<b>\$ 2,545</b>	<b>\$ 2,646</b>
16										
17	<b>Revenues</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>
18										
19	<b>Total Department Net Expenditures</b>	<b>\$ 1,953</b>	<b>\$ 2,112</b>	<b>\$ 2,320</b>	<b>\$ 2,176</b>	<b>\$ 2,264</b>	<b>\$ 2,354</b>	<b>\$ 2,448</b>	<b>\$ 2,545</b>	<b>\$ 2,646</b>

Schedule may not foot due to rounding.



## Project Expenditures

# 2020-2021 Budget Request: Project Expenditures

\$ in Thousands

Project Expenditures										
Line		2018 Actual*	2019 Budget	2019 Forecast	2020 Request	2021 Request	2022 Projection	2023 Projection	2024 Projection	2025 Projection
1	Revision Requests	\$ 2,557	\$ 4,000	\$ 4,000	\$ 4,000	\$ 4,000	\$ 3,000	\$ 3,000	\$ 3,000	\$ 4,000
2	Regulatory	948	2,000	800	2,000	2,000	2,000	2,000	2,000	2,000
3	Internal Enhancements	23,060	7,500	6,900	11,250	11,000	6,000	6,000	6,000	8,000
4	Technical Foundation - Hardware Refreshes	8,027	4,000	4,200	2,250	2,250	7,250	18,750	18,850	8,250
5	Technical Foundation - Software	5,733	11,000	4,500	9,500	9,750	9,000	12,900	9,000	9,000
6	Real Time Co-optimization Project	-	-	-	3,000	5,000	12,000	10,000	10,000	-
7	<b>Project Expenditures</b>	<b>\$ 40,325</b>	<b>\$ 28,500</b>	<b>\$ 20,400</b>	<b>\$ 32,000</b>	<b>\$ 34,000</b>	<b>\$ 39,250</b>	<b>\$ 52,650</b>	<b>\$ 48,850</b>	<b>\$ 31,250</b>

\* Preliminary

Schedule may not foot due to rounding.



# 2020-2021 Budget Request: Project Expenditures - Project Priority List Detail

Line	Project Category	Project Name	2020 Budget Range	2021 Budget Range
1	Revision Requests	CMM NPRRs Phase 2 (NPRR484, NPRR867, NPRR829, NPRR907)	\$500k-\$1M	-
2	Revision Requests	Require ERCOT to Issue a DC Tie Curtailment Notice Prior to Curtailing any DC Tie Load (NPRR825)	\$100k-\$250k	-
3	Revision Requests	Creation of Direct Current Tie Operator Market Participant Role (NPRR857)	\$500k-\$1M	-
4	Revision Requests	Creation of ERCOT Contingency Reserve Service and Revisions to Responsive Reserve (NPRR863)	\$500k-\$1M	-
5	Revision Requests	Adjustments to Pricing and Settlement for Reliability Unit Commitments (RUCs) of On-Line Combined Cycle Generation Resources (NPRR884)	\$100k-\$250k	-
6	Revision Requests	Revision Request Funding - 2020/2021	\$3M-\$4M	\$3M-\$4M

Line	Project Category	Project Name	2020 Budget Range	2021 Budget Range
7	Regulatory	Cyber Security Project #27	-	\$500k-\$1M
8	Regulatory	2021 CIP Recovery Operations	-	<\$50k
9	Regulatory	Regulatory Funding - 2020/2021	\$1M-\$2M	\$1M-\$2M





# 2020-2021 Budget Request: Project Expenditures - Project Priority List Detail

Line	Project Category	Project Name	2020 Budget Range	2021 Budget Range
10	Internal Enhancements	ECAP - ECMS Implementation Phase 2	\$1M-\$2M	\$50k-\$100k
11	Internal Enhancements	2017 EPS Metering Enhancements	<\$50k	-
12	Internal Enhancements	Security Constrained Unit Commitment (SCUC)	\$1M-\$2M	\$1M-\$2M
13	Internal Enhancements	Automation of MP Partnership Deletions, Mothballed Status & Seasonal Operation Period in Registration System	\$100k-\$250k	-
14	Internal Enhancements	Objectives and Key Results (OKR) Tool Implementation	\$50k-\$100k	-
15	Internal Enhancements	Parameter Estimation	\$50k-\$100k	-
16	Internal Enhancements	Standard Report for Events and Near-Miss Analysis	\$100k-\$250k	-
17	Internal Enhancements	Outage Scheduler System Enhancements	\$250k-\$500k	-
18	Internal Enhancements	API Management Strategy	\$250k-\$500k	-
19	Internal Enhancements	IT Archive (ITA) - Implementation	\$100k-\$250k	-
20	Internal Enhancements	Reactive Power Coordination - Execution Phase	\$1M-\$2M	\$250k-\$500k
21	Internal Enhancements	CIM v16 Upgrade (NMMS and TP)	\$100k-\$250k	-
22	Internal Enhancements	Differential Dispatch of Generators	\$100k-\$250k	-
23	Internal Enhancements	Centralized Application Log Management (CALM) - Phase 2	\$100k-\$250k	-
24	Internal Enhancements	Implementation of Portfolio Management tool(s)	\$100k-\$250k	\$100k-\$250k
25	Internal Enhancements	Netload Ramp Monitoring Tool	<\$50k	\$100k-\$250k
26	Internal Enhancements	Replacement of Enterprise Monitoring Software	\$100k-\$250k	-
27	Internal Enhancements	Improve Efficiency of Managing Public Data Requests	\$250k-\$500k	\$100k-\$250k
28	Internal Enhancements	Converged Endpoint Protection	\$250k-\$500k	-
29	Internal Enhancements	DevOps Tool Chain	\$500k-\$1M	\$500k-\$1M
30	Internal Enhancements	Enterprise Architecture Framework	\$100k-\$250k	-



# 2020-2021 Budget Request: Project Expenditures - Project Priority List Detail

Line	Project Category	Project Name	2020 Budget Range	2021 Budget Range
31	Internal Enhancements	Email Integration with SharePoint	\$100k-\$250k	-
32	Internal Enhancements	ERCOT Internal Records	\$100k-\$250k	-
33	Internal Enhancements	Market Rules Automation of Business Processes	<\$50k	\$100k-\$250k
34	Internal Enhancements	Database Activity Monitoring Expansion	\$100k-\$250k	\$100k-\$250k
35	Internal Enhancements	Intra-Hour Variability Monitoring Tool	\$100k-\$250k	-
36	Internal Enhancements	On-Site Storage	\$100k-\$250k	\$100k-\$250k
37	Internal Enhancements	Repurpose Blue Building	\$250k-\$500k	\$250k-\$500k
38	Internal Enhancements	ERA –Enterprise R Architecture	<\$50k	-
39	Internal Enhancements	Control Room Macomber Map Replacement and External Users - GridGeo	\$100k-\$250k	\$100k-\$250k
40	Internal Enhancements	Privileged Account Management - Phase 3	\$100k-\$250k	\$100k-\$250k
41	Internal Enhancements	Test Data and Environment Enhancement - Implementation	-	\$250k-\$500k
42	Internal Enhancements	Automate Verifiable Cost Data Gathering	-	\$500k-\$1M
43	Internal Enhancements	Changing Grid Enhancements	\$500k-\$1M	\$1M-\$2M
44	Internal Enhancements	Capital Efficiencies and Enhancements - 2020/2021	\$500k-\$1M	\$500k-\$1M
45	Internal Enhancements	Efficiency/Enhancement Projects Expected to be Approved in 2020/2021	\$1M-\$2M	\$1M-\$2M



# 2020-2021 Budget Request: Project Expenditures - Project Priority List Detail

Line	Project Category	Project Name	2020 Budget Range	2021 Budget Range
46	Technical Foundation - Hardware Refreshes	Common Infrastructure	\$1M-\$3M	\$1M-\$3M
47	Technical Foundation - Hardware Refreshes	Tech Foundation - Hardware Projects Expected to be Approved in 2020/2021	\$250k-\$500k	\$250k-\$500k

Line	Project Category	Project Name	2020 Budget Range	2021 Budget Range
48	Technical Foundation - Software	Privileged Account Management (PAM) Phase 2	\$500k-\$1M	-
49	Technical Foundation - Software	Enterprise Database Upgrade	<\$50k	-
50	Technical Foundation - Software	EDI Map and Translator Replacement (Retail System Replacement)	\$1M-\$2M	<\$50k
51	Technical Foundation - Software	Tech Refresh - MMS/OS	\$1M-\$2M	\$50k-\$100k
52	Technical Foundation - Software	Tech Refresh - REC Rewrite	\$250k-\$500k	-
53	Technical Foundation - Software	Tech Refresh - Business Intelligence	\$100k-\$250k	-
54	Technical Foundation - Software	Middleware Job Scheduling Software Replacement	\$100k-\$250k	-
55	Technical Foundation - Software	NAESB Application Tech Refresh	<\$50k	-
56	Technical Foundation - Software	Wide Area Network (WAN) Refresh	\$100k-\$250k	-
57	Technical Foundation - Software	MPIM Replacement	\$500k-\$1M	-
58	Technical Foundation - Software	Tech Refresh - Microsoft Office Upgrade - (Exchange, Mail, Calendar, Skype)	\$500k-\$1M	-
59	Technical Foundation - Software	Tech Refresh - Work Management System Upgrade or Replacement	\$50k-\$100k	-
60	Technical Foundation - Software	Internet Protocol Address Management (iPAM)	\$100k-\$250k	-



# 2020-2021 Budget Request: Project Expenditures - Project Priority List Detail

Line	Project Category	Project Name	2020 Budget Range	2021 Budget Range
61	Technical Foundation - Software	Cyber Security Project #25	\$50k-\$100k	-
62	Technical Foundation - Software	Tech Refresh - MV90 Software & Database upgrade	\$250k-\$500k	-
63	Technical Foundation - Software	Tech Refresh - Registration System Upgrade	\$500k-\$1M	\$100k-\$250k
64	Technical Foundation - Software	Settlements Code Enhancement: Invoices & Statements, Bill Calculations	\$100k-\$250k	-
65	Technical Foundation - Software	Cyber Security Project #26	\$100k-\$250k	\$100k-\$250k
66	Technical Foundation - Software	Tech Refresh - Control Room Tech Refresh	-	\$500k-\$1M
67	Technical Foundation - Software	Tech Refresh - EMS Upgrade	\$500k-\$1M	\$1M-\$3M
68	Technical Foundation - Software	Tech Refresh - MarkeTrak Upgrade	-	<\$50k
69	Technical Foundation - Software	Future Tech Refresh - CRR	-	\$500k-\$1M
70	Technical Foundation - Software	Future Tech Refresh - NMMS	-	\$500k-\$1M
71	Technical Foundation - Software	Future Tech Refresh - Enterprise Database Software	\$500k-\$1M	-
72	Technical Foundation - Software	Tech Foundation -Software Projects Expected to be Approved in 2020/2021	\$1M-\$2M	\$4M-\$6M

