



LCRA Board Work Session  
DRAFT

The background of the slide is a photograph of a large concrete dam. Water is cascading over the dam's spillways, creating a series of white, frothy streams. The dam is a long, multi-bay structure with a walkway on top. In the foreground, there are lush green bushes and purple flowers, likely lavender, which are slightly out of focus. The sky is blue with some light clouds.

# FISCAL YEAR 2020 BUSINESS AND CAPITAL PLANS

LOWER COLORADO RIVER AUTHORITY

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## **LCRA Board of Directors**

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The Board of Directors is composed of 15 members appointed to six-year terms by the governor with advice and consent of the Texas Senate. Directors represent counties in LCRA's electric and water service areas. The directors meet regularly to set strategic corporate direction for the general manager and staff, to approve projects and large expenditures, and to review progress on major activities and industry issues.

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These business and capital plans present a long-term vision and summary of operational plans for LCRA and its nonprofit corporations. The business and capital plans should not be used as a basis for making a financial decision with regard to LCRA or any of its securities or other obligations. These business and capital plans are intended to satisfy the official intent requirements set forth in IRS Treasury Regulations Section 1.150-2. For more complete information on LCRA and its obligations, refer to LCRA's annual financial report, the official statements relating to LCRA's bonds, and the annual and material event disclosures filed by LCRA with nationally recognized municipal securities information repositories and the State Information Depository pursuant to Rule 15c2-12 of the U.S. Securities and Exchange Commission. The information in this report and within each of the documents referenced applies only as of the report's date. The business and capital plans include forecasts based on current assumptions used for planning purposes only and are subject to change. Copies of the documents referenced in this report may be obtained from Stephen Kellicker, senior vice president of Finance, LCRA, 3700 Lake Austin Blvd., Austin, TX 78703.





# LCRA's Mission

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To enhance the quality of life of the Texans we serve through water stewardship, energy and community service.



A scenic view of a lake with autumn foliage and a house on a hill in the background. The foreground is framed by the branches of a tree with golden-brown leaves. The water is calm, reflecting the sky and the surrounding trees. In the distance, a house is visible on a hillside.

I will make every  
LCRA endeavor outstanding.

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My Colorado Commitment



# A Commitment to Public Service

Much of Texas has undergone extraordinary change in recent years, but one thing has remained the same: LCRA's commitment to public service. During our 85-year history, we have remained steadfast in working to fulfill our mission to enhance the quality of life of the Texans we serve through water stewardship, energy and community service. In recent years, we reaffirmed our mission with My Colorado Commitment: to make every LCRA endeavor outstanding.

In keeping with that commitment, LCRA's vision and objectives are:

**Vision: We will operate and grow our business to support growth in Texas.**

**Objectives:**

- **Excel in execution.**
- **Provide competitive products.**
- **Deliver exceptional customer service.**
- **Strengthen the bottom line.**

All of LCRA's business units have a role to play in achieving our vision and objectives. To that end, we've created specific visions for each business unit that tie to the overall vision and objectives for LCRA:

- **Wholesale Power: Improve our competitive position.**
- **Transmission: Maximize value to our stakeholders through an uncompromising commitment to safety, our employees and system performance.**
- **Water: Increase and preserve the region's water supplies.**
- **Public Services: Provide public services while achieving financial self-sufficiency whenever possible.**

The following pages also lay out our specific objectives that describe how we'll achieve our vision in each business unit.

## Serving Texans

Texas is growing, and LCRA is growing with it, providing vital water, power and public services to help keep our state's economy strong and to improve the quality of life of the Texans we serve.

# LCRA's Vision and Objectives

## LCRA

Vision: We will operate and grow our business to support growth in Texas.

Objectives:

- Excel in execution.
- Provide competitive products.
- Deliver exceptional customer service.
- Strengthen the bottom line.

## Wholesale Power

Vision: Improve our competitive position.

Objectives:

- Keep the safety of our employees and the public our top priority; nothing we do is so important it can't be done safely.
- Minimize our wholesale power rate while keeping rate fluctuations low and maximizing the net margin of our generation fleet.
- Strive to perform all of our activities in the most rigorous, effective and appropriate manner possible.
- Provide exceptional service to our wholesale power customers and our internal customers.
- Help our wholesale power customers gain more load, and acquire new customers for LCRA WSC Energy.

- Ensure our efforts align with our business objectives, and coordinate our activities effectively throughout LCRA.
- Empower and develop our team members to be proactive, innovative and accountable to make every LCRA endeavor outstanding.

## Transmission

Vision: Maximize value to our stakeholders through an uncompromising commitment to safety, our employees and system performance.

Objectives:

- Keep the safety of our employees and the public our top priority; nothing we do is so important it can't be done safely.
- Optimize and develop system assets to support customer needs in Texas.
- Provide cost-effective transmission and telecommunication services.
- Achieve targeted levels of system availability, performance and efficiency.
- Expand production flexibility and capabilities through the effective management of internal and external resources.
- Ensure our efforts align with our business objectives, and coordinate our activities effectively throughout LCRA.
- Empower and develop our team members to be proactive, innovative and accountable to make every LCRA endeavor outstanding.



# LCRA's Vision and Objectives (Continued)

## Water

Vision: Increase and preserve the region's water supplies.

Objectives:

- Keep the safety of our employees and the public our top priority; nothing we do is so important it can't be done safely.
- Expand the region's water supplies, and work to meet the long-term water needs for existing and future customers.
- Minimize costs for customers by efficiently operating and maintaining equipment and infrastructure and pursuing low-cost, innovative measures for new water supplies.
- Obtain Texas Commission on Environmental Quality approval of the revised LCRA Water Management Plan.
- Maintain and invest in LCRA's system of dams to ensure their continued safe and effective operation, which is critical for water supplies and flood management in the basin.
- Monitor and protect the water quality and the health of the lower Colorado River basin.
- Focus on water conservation by providing technical assistance, cost-sharing grants and irrigation evaluations.
- Ensure our efforts align with our business objectives, and coordinate our activities effectively throughout LCRA.
- Empower and develop our team members to be proactive, innovative and accountable to make every LCRA endeavor outstanding.

## Public Services

Vision: Provide public services while achieving financial self-sufficiency whenever possible.

Objectives:

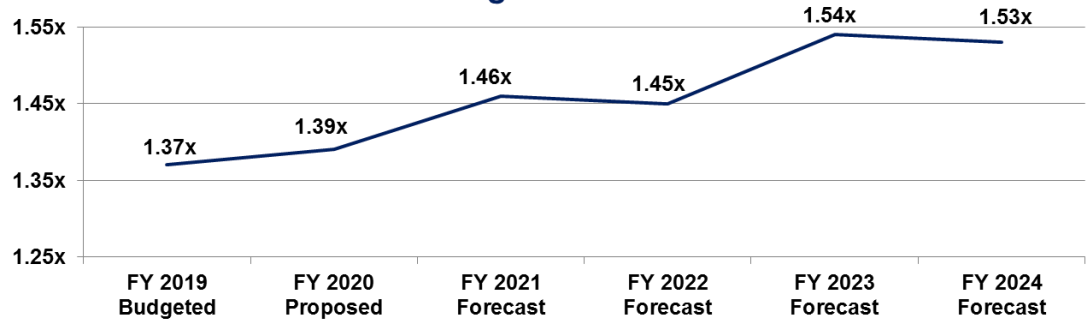
- Keep the safety of our employees and the public our top priority; nothing we do is so important it can't be done safely.
- Provide outdoor adventure, river access and natural science education to communities throughout the Colorado River basin through LCRA's system of parks, recreation areas, natural resource areas and river access sites.
- Contribute to LCRA's land stewardship mission through soil, water and wildlife conservation.
- Improve public safety through law enforcement and emergency assistance during floods and other disasters that may affect the communities LCRA serves.
- Help protect critical infrastructure – including dams and the Texas power grid – from potential cyberattacks and physical threats.
- Implement opportunities to increase revenue and decrease costs as appropriate to achieve greater financial self-sufficiency for the public services we provide.
- Empower and develop our team members to be proactive, innovative and accountable to make every LCRA endeavor outstanding.

# LCRA Financial Summary

- Approval of this business plan authorizes LCRA to spend \$365.4 million for operations in fiscal year 2020.
- Debt service coverage, a widely used measure of financial performance, is forecast to be 1.39x in FY 2020.
- Debt service coverage is projected to remain between 1.39x and 1.54x over the five-year planning horizon.
- Stable debt service coverage reflects LCRA's commitment to manage costs and grow our business to support growth in Texas.

Note: GenTex 1 is the original portion of the Lost Pines 1 Power Project from which energy is sold directly to wholesale electric customers.

## LCRA Debt Service Coverage



(Dollars in millions)

	Budgeted		Forecast			
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Revenues <sup>1</sup>	\$ 948.8	1,026.0	1,053.8	1,092.9	1,228.2	1,232.8
Expenses <sup>1</sup>	522.7	574.5	601.6	619.0	649.7	653.8
<b>Net Operating Margin</b>	426.1	451.4	452.1	473.9	578.5	579.0
Less: GenTex 1 Funds <sup>2</sup>	(2.3)	(7.3)	(1.2)	(0.1)	(2.3)	(0.4)
<b>Net Margin for Debt Service, Adjusted</b>	423.9	444.1	450.9	473.8	576.3	578.6
<b>Debt Service</b>	\$ 308.5	319.2	308.2	326.8	375.0	378.5
<b>Debt Service Coverage</b>	1.37x	1.39x	1.46x	1.45x	1.54x	1.53x

<sup>1</sup> Revenues and expenses are net of intracompany transfers. Revenues include interest income. Expenses exclude the LCRA TSC capital charge, which is a capital expense for LCRA consolidated.

<sup>2</sup> Includes adjustments related to GenTex 1 capital funding and reserve funding.

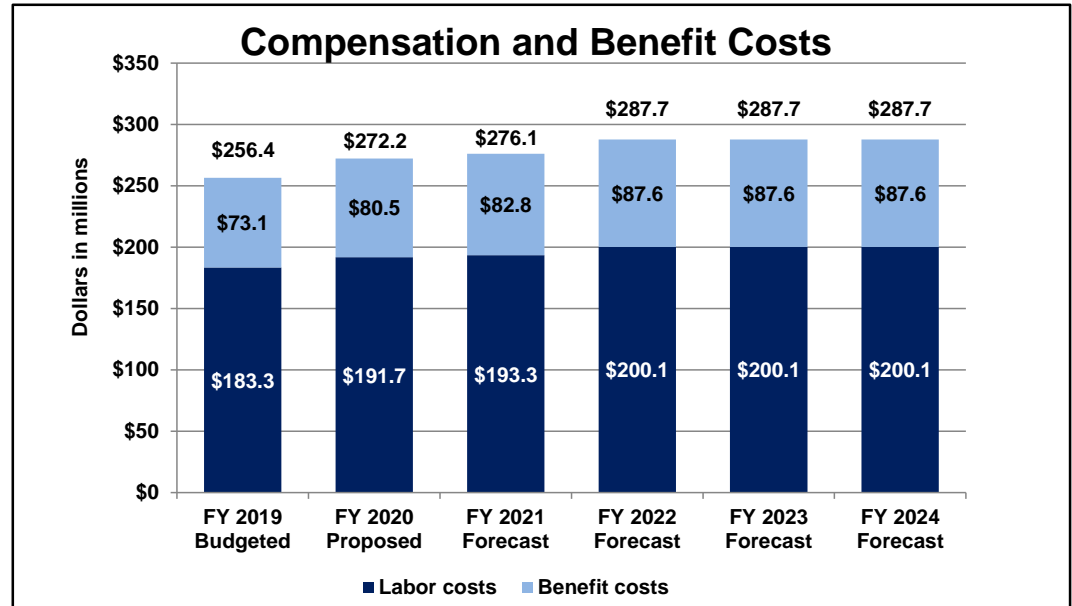


# Compensation and Benefits

Compensation and benefits are key drivers of LCRA's budget.

- Budgeted positions for FY 2020 are 2,053<sup>1</sup>, which is an increase of 75 positions (4%) from the FY 2019 budget.
  - About 50 of the new positions are to support and sustain growth of the transmission system.
  - The remaining positions are for Wholesale Power, Water, Public Services and Enterprise Support needs.
- FY 2020 compensation and benefit costs will increase by \$15.8 million, reflecting:
  - Position increases discussed above.
  - An increase in pension costs reflecting the use of a new mortality table.

<sup>1</sup> Excludes seasonal workers.



- A 3.5% labor cost increase is planned in FY 2022, with future years assuming a flat labor budget.
- LCRA continues to manage benefit costs, which range from 42% to 44% of labor costs for the next five years.

# Wholesale Power – Financial Summary

Wholesale Power shows continued financial strength for a sustainable business.

- Debt service coverage is projected to range between 1.28x and 1.38x over the five-year planning horizon.
- Financials remain strong and support the objective of minimizing our wholesale power rate while keeping rate fluctuations low and maximizing the net margin of our generation fleet.
- LCRA expects to continue to fund capital projects through FY 2024 from coverage dollars or existing funds, rather than issuing additional debt.

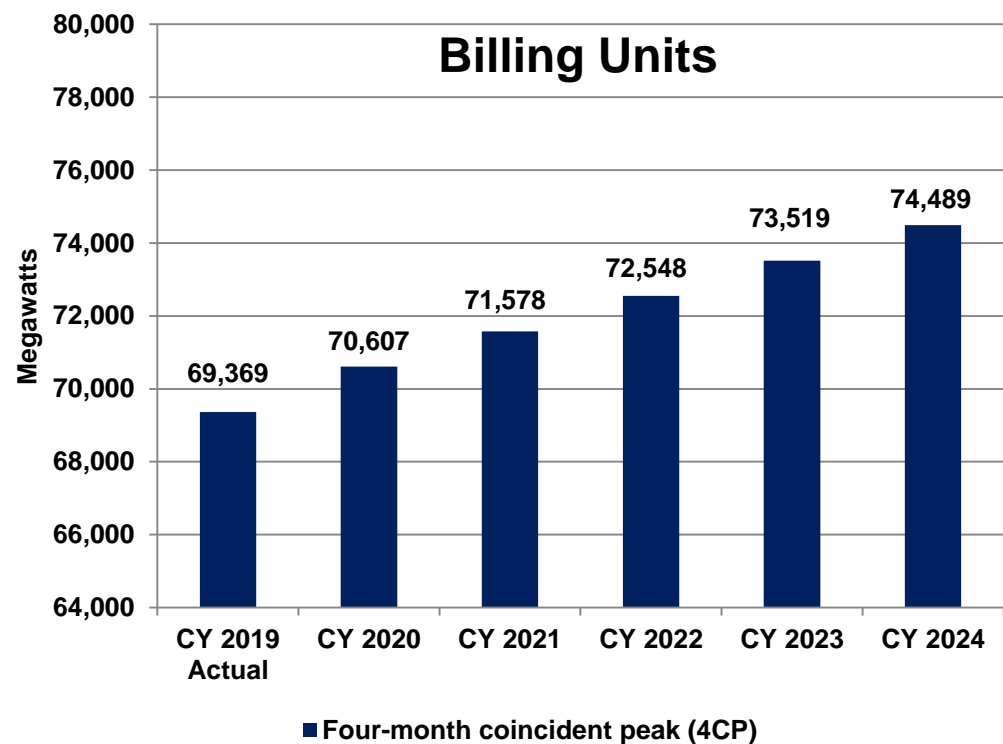
**Confidential competitive electric information has been removed from this version of the document.**



# LCRA Transmission Services Corporation – Billing Units

LCRA TSC's billing unit is the four-month coincident peak (4CP) in the Electric Reliability Council of Texas market.

- 4CP is the average of the peak ERCOT electrical demands (measured in kilowatts) during the months of June, July, August and September of the previous calendar year.
- The Public Utility Commission of Texas approves the average of these four ERCOT system peaks each year to establish a 4CP for the following calendar year.
- 4CP is forecast to grow about 1.3% per year across ERCOT.



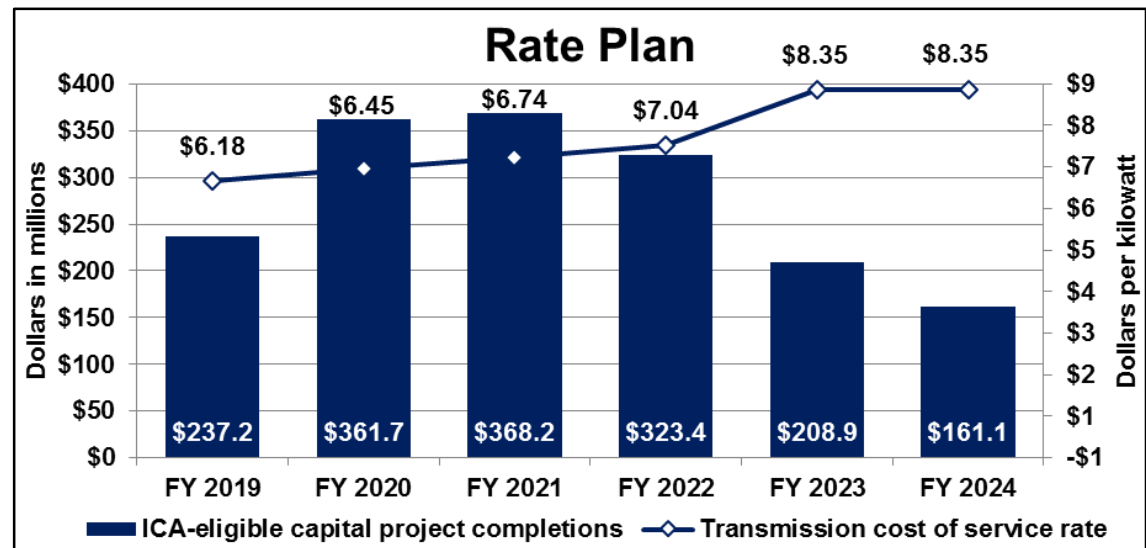
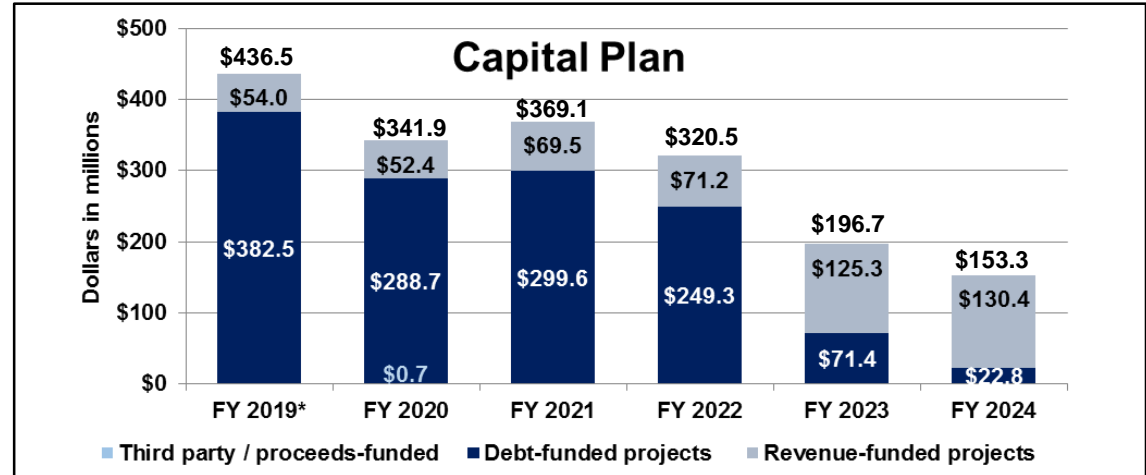
Note: One megawatt equals 1,000 kilowatts.

# LCRA TSC – Capital and Rates

## We're growing the transmission system to meet customer needs:

- LCRA TSC plans to spend about \$1.4 billion on capital projects over the five-year planning period to support the needs of the ERCOT and LCRA TSC systems.
- LCRA TSC plans to recover its investment in capital costs for projects that are completed and energized through interim capital addition (ICA) filings in FY 2020 through FY 2024. Additionally, LCRA TSC plans to file a transmission cost of service rate case using a FY 2021 test year with new rates going into effect in FY 2023.
- LCRA TSC will continue to recover costs associated with additional projects beyond FY 2024 after they are completed and energized.

\* Note: The LCRA Board of Directors in January 2019 approved the amended capital spending limit for LCRA TSC for FY 2019.





# LCRA TSC – Financial Summary

- LCRA continues to expand the Transmission organization, adding staff and equipment needed to increase its current capacity to operate and construct facilities for LCRA TSC and provide customer services.
- Transmission plans to manage costs to maintain its debt service coverage ratios between 1.36x and 1.50x.

	Budgeted		Proposed		Forecast	
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
(Dollars in millions)						
Revenues	\$ 425.8	457.5	487.7	518.1	628.9	641.7
Operations and Maintenance	110.9	117.9	124.4	129.2	128.0	131.6
<b>Net Operating Margin</b>	<b>314.9</b>	<b>339.5</b>	<b>363.3</b>	<b>388.9</b>	<b>500.9</b>	<b>510.0</b>
Plus: Interest Income	3.8	5.6	6.6	6.8	6.9	5.6
Less: Assigned Enterprise Expense	48.1	51.0	49.7	54.5	61.3	63.9
Public Service Fund	12.8	13.7	14.6	15.5	18.9	19.2
Resource Development Fund	8.5	9.1	9.8	10.4	12.6	12.8
<b>Net Margin Available for Debt Service</b>	<b>249.3</b>	<b>271.3</b>	<b>295.8</b>	<b>315.3</b>	<b>415.2</b>	<b>419.7</b>
<b>Debt Service</b>	<b>\$ 180.4</b>	<b>199.1</b>	<b>211.5</b>	<b>229.9</b>	<b>277.7</b>	<b>279.2</b>
<b>Debt Service Coverage</b>	<b>1.38x</b>	<b>1.36x</b>	<b>1.40x</b>	<b>1.37x</b>	<b>1.50x</b>	<b>1.50x</b>

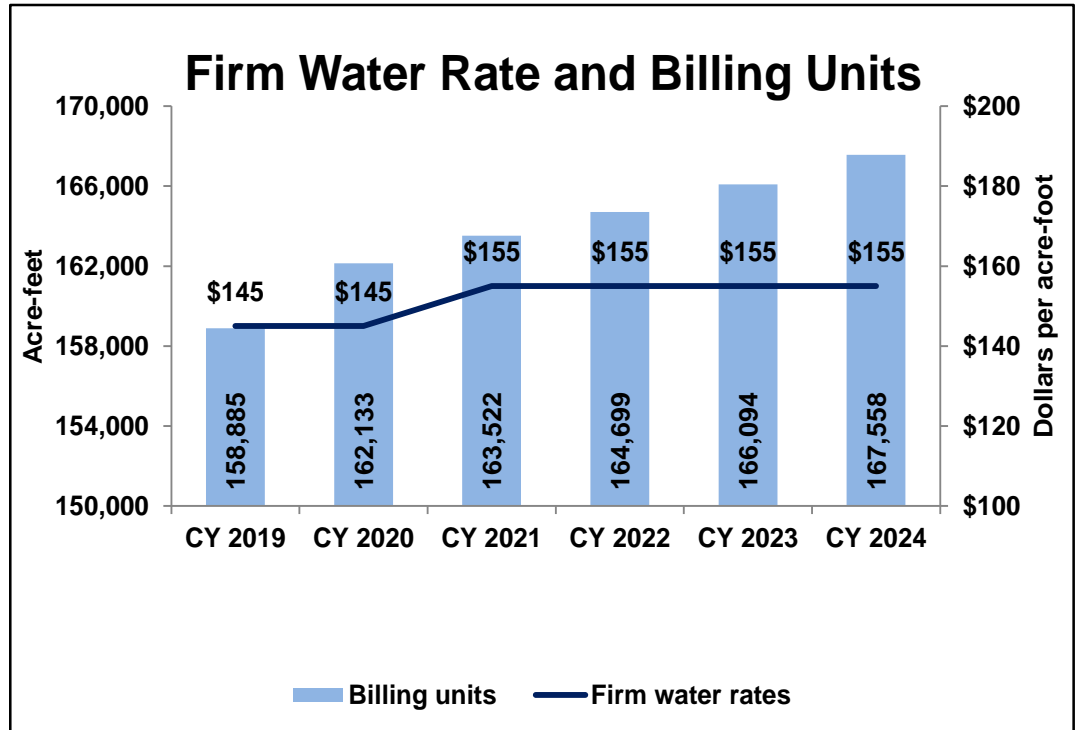
# Water – Firm Billing Units and Rates

The firm water rate will remain flat through FY 2020. LCRA has delayed the rate increase previously projected for calendar year 2020 to calendar year 2021.

**We are managing costs with a one-year delay in a planned firm water rate increase.**

- Billing units are forecast to rise by 2% in calendar year 2020 and then grow at an average of 1% annually through the plan period.
- The firm water rate is projected to increase to \$155 per a-f beginning with the January 2021 billing period.

Note: Water supplies managed by LCRA are divided into firm and interruptible water. Firm water is available even during a severe drought. During drought or times of shortage, interruptible water is cut back or cut off.

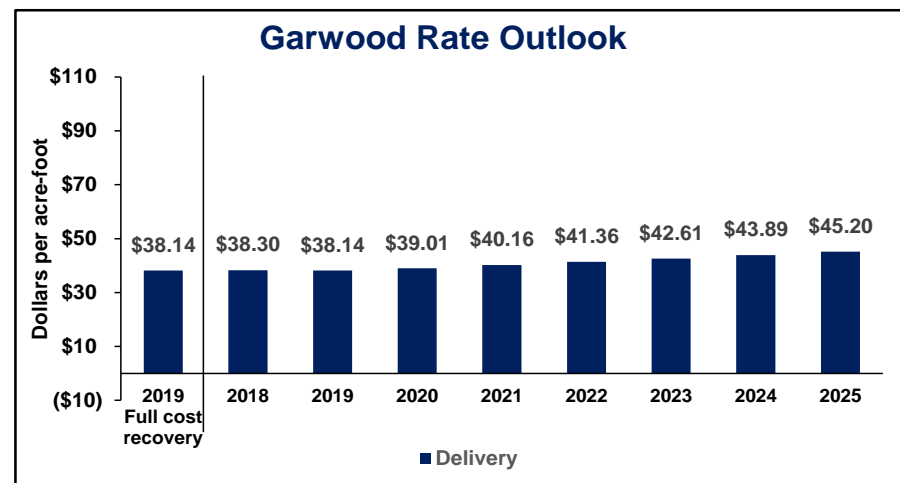
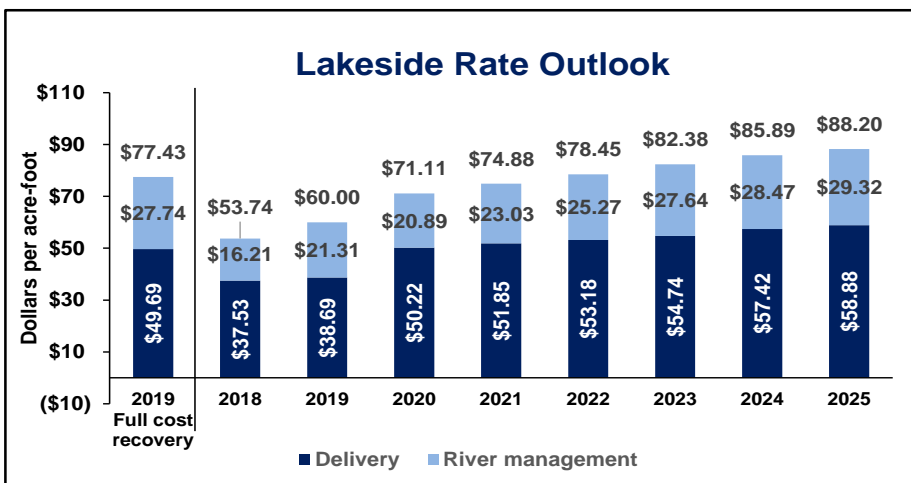
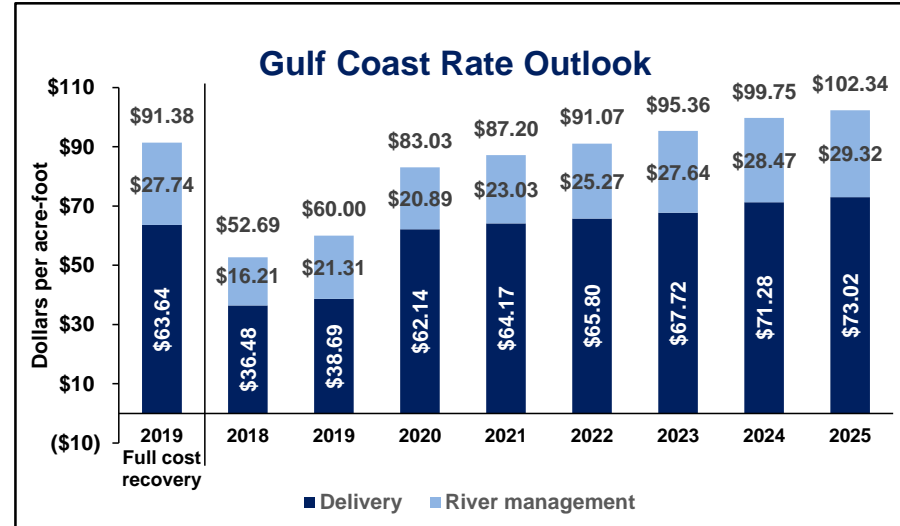


# Water – Interruptible Rates

## Full cost recovery assumes a gradual approach.

- The Board approved rates for calendar year 2019 in January 2019.
- Rates for Gulf Coast and Lakeside irrigation divisions are projected to increase to gradually recover the divisions' fully allocated shares of river management costs by calendar year 2023, assuming full water availability. The Garwood division is not subject to river management costs. Rates for Gulf Coast, Lakeside and Garwood irrigation divisions are based on full recovery of delivery costs associated with operation of the divisions.
- The rates for 2020 and beyond are subject to change based on actual and projected costs and billing units.

Note: The 2019 rates for Gulf Coast and Lakeside reflect a one-time contribution of \$1.7 million from the LCRA Strategic Reserve Fund for capital spending. The rate impact of the contribution is reflected in the delivery component of the rate.



# Water – Capital

## Dam rehabilitation projects:

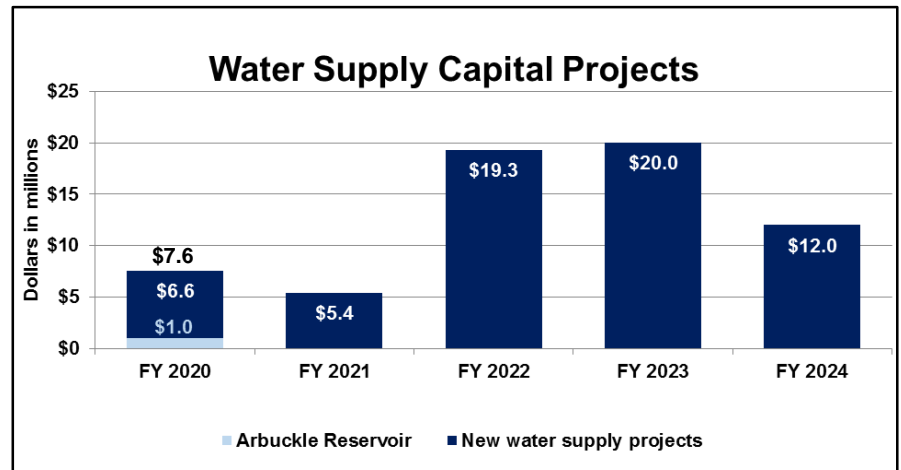
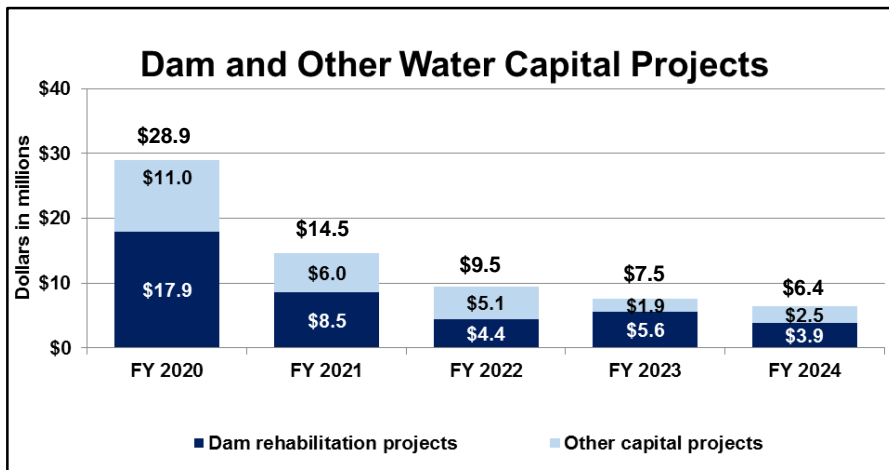
- LCRA plans to spend \$40.4 million on dam rehabilitation projects over the next five years for their continued safe and effective operation. This total excludes projects that are strictly for hydroelectric power generation. As the projects continue, the costs to rehabilitate the dams could increase. LCRA primarily will issue debt to pay for these projects and recover the costs in the firm water rate.

## Other capital projects:

- Other capital projects include capital for irrigation and minor capital needs for Water. LCRA is contributing \$1.7 million towards capital projects in the irrigation divisions to support the infrastructure needs for continued business operations.

## New water supply capital projects:

- Capital spending for the Arbuckle Reservoir will be completed in FY 2020.
- LCRA plans to spend about \$63.3 million over the next five years for new water supply projects. LCRA expects to fund these projects with existing funds or by issuing debt and recovering the costs in the firm water rate.
- LCRA continues to evaluate the timing and funding for the construction phases of future projects.





# Water – Financial Summary

Providing long-term water supply at a low rate.

- FY 2020 revenues reflect the current firm rate of \$145 per acre-foot. The firm rate is assumed to increase to \$155 per a-f beginning in the January 2021 billing period.
- A portion of firm revenues is deferred in FY 2020 to a rate stabilization fund, which is excluded from revenues until the fund is used.
- The financial summary assumes agricultural water deliveries in every year using rolling historical averages for acres.
- Annual debt service includes the Texas Water Development Board Arbuckle Reservoir debt paid from the Resource Development Fund.

	(Dollars in millions)		Forecast			
	Budgeted FY 2019	Proposed FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
<b>Revenues</b>						
Firm Water	\$ 20.0	23.1	25.8	27.0	27.2	27.5
Agriculture	11.0	10.5	11.6	12.1	12.6	13.1
Other	2.1	2.1	2.0	2.0	2.0	2.0
<b>Total Revenues</b>	<b>33.1</b>	<b>35.7</b>	<b>39.4</b>	<b>41.1</b>	<b>41.8</b>	<b>42.6</b>
Operations and Maintenance	18.1	18.0	16.4	17.0	17.1	17.1
<b>Net Operating Margin</b>	<b>15.0</b>	<b>17.6</b>	<b>23.0</b>	<b>24.2</b>	<b>24.8</b>	<b>25.4</b>
Plus: Interest Income	1.1	1.4	1.7	1.5	1.5	1.5
Less: Assigned Enterprise Expense	4.2	5.5	6.1	6.0	6.1	6.6
Public Service Fund	1.0	1.1	1.2	1.2	1.3	1.3
Resource Development Fund	0.0	0.5	0.6	0.6	0.6	0.6
<b>Net Margin Available for Debt Service</b>	<b>10.9</b>	<b>12.0</b>	<b>16.8</b>	<b>17.9</b>	<b>18.4</b>	<b>18.6</b>
<b>Debt Service</b>	<b>\$ 16.0</b>	<b>15.8</b>	<b>18.5</b>	<b>18.8</b>	<b>19.5</b>	<b>20.8</b>
<b>Debt Service Coverage</b>	<b>0.68x</b>	<b>0.76x</b>	<b>0.91x</b>	<b>0.95x</b>	<b>0.94x</b>	<b>0.89x</b>
Plus: Resource Development Funding	\$ 10.3	10.6	12.9	13.0	12.9	13.0
<b>Debt Service Coverage, Adjusted</b>	<b>1.32x</b>	<b>1.44x</b>	<b>1.61x</b>	<b>1.64x</b>	<b>1.60x</b>	<b>1.52x</b>

# Public Service Fund

LCRA uses the Public Service Fund on statutory programs that do not fully recover their costs.

- FY 2020 Public Service Fund operating fund requirements includes:
  - \$6.8 million for parks.
  - \$3.7 million for water quality programs.
  - \$3 million for natural resource protection.
- These services provide some revenue but require annual support to cover the costs of operations, Enterprise Support and capital.
- The PSF grants include \$1.1 million annually for the Community Development Partnership Program. Beginning in FY 2020, it also includes \$500,000 annually for the Colorado River Land Trust.
- Fund sources include contributions from budgeted nonfuel Wholesale Power costs, budgeted LCRA WSC Energy net margin, and budgeted revenue from GenTex 1, LCRA TSC, Water and Strategic Services.

(Dollars in millions)

	Budgeted	Proposed	Forecast			
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
<b>Revenue</b>	\$ 4.5	4.4	5.0	5.0	5.0	5.0
<b>Total Operating Expense</b>	18.3	18.0	18.5	19.1	19.3	19.4
<b>Operating Fund Requirement</b>	13.8	13.5	13.5	14.1	14.2	14.4
Capital Spending	1.7	2.3	2.4	2.3	2.3	2.3
Assigned Enterprise Capital	0.2	0.2	0.3	0.4	0.3	0.3
Reserves	0.1	0.0	0.1	0.1	0.0	0.0
Grants	1.0	1.6	1.6	1.6	1.6	1.6
<b>Total Funding Requirement</b>	\$ 16.8	17.7	18.0	18.5	18.5	18.6

(Dollars in millions)

	Budgeted	Proposed	Forecast			
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
<b>Sources</b>						
<b>Public Service Funds</b>						
Wholesale Power	\$ 7.6	7.6	6.8	6.7	6.9	6.8
GenTex Power Corporation	1.1	1.4	1.0	0.9	0.9	0.8
Water	1.0	1.1	1.2	1.2	1.3	1.3
LCRA TSC	12.8	13.7	14.6	15.5	18.9	19.2
LCRA WSC Energy	0.0	0.0	0.1	0.1	0.1	0.0
Strategic Services	0.4	0.5	0.5	0.5	0.5	0.5
Subtotal	22.8	24.4	24.2	25.1	28.5	28.6
<b>Uses</b>						
Public Service Activities	16.8	17.7	18.0	18.5	18.5	18.6
Resource Development Fund	1.0	1.0	1.0	1.0	1.0	1.0
Strategic Reserve Fund	5.0	5.6	5.2	5.6	9.0	9.0
Subtotal	22.8	24.4	24.2	25.1	28.5	28.6
<b>Remaining PSF Funds</b>	\$ 0.0	0.0	0.0	0.0	0.0	0.0

# Strategic Services

Strategic Services includes external services that people pay LCRA to provide.

- Strategic Services primarily includes:
  - Transmission Customer Service.
  - LCRA Environmental Laboratory Services.
  - Telecommunications radio sales.

	Budgeted		Proposed		Forecast	
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
(Dollars in millions)						
Revenues	\$ 14.4	19.6	19.3	19.5	19.6	19.9
Expenses	9.4	13.7	13.4	13.6	13.6	13.6
<b>Net Operating Margin</b>	5.0	5.9	5.8	5.9	6.0	6.2
Less: Assigned Enterprise Expense	2.3	3.2	3.2	3.3	3.4	3.4
Public Service Fund	0.4	0.5	0.5	0.5	0.5	0.5
Resource Development Fund	0.1	0.3	0.3	0.3	0.3	0.3
<b>Net Margin Available</b>	<b>\$ 2.2</b>	<b>1.9</b>	<b>1.8</b>	<b>1.7</b>	<b>1.8</b>	<b>2.0</b>

# Enterprise Support

Enterprise costs consist of essential functions that support business operations across LCRA.

- Enterprise Support includes:
  - Digital Services.
  - Facilities.
  - Legal.
  - Financial.
  - Regulatory.
  - Others.
- FY 2020 costs increase to support Transmission growth and enterprise needs, such as digital services and insurance.
- Some costs are direct-charged when specific services are performed for a product line.
- Most other costs are assigned based on a three-factor formula of assets, labor hours and revenue.

	(Dollars in millions)					
	Budgeted FY 2019	Proposed FY 2020	Forecast			
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
<b>Net Enterprise Costs</b>	\$ 107.5	118.3	118.1	122.4	123.3	124.6
<b>Cost Assignment</b>						
Wholesale Power and Nonprofit Corporations	28.0	29.0	29.4	30.4	30.8	31.1
LCRA TSC	48.1	51.0	49.7	54.5	61.3	63.9
Water	4.2	5.5	6.1	6.0	6.1	6.6
Public Service Fund Activities	2.8	2.8	2.8	2.9	2.9	3.0
Strategic Services	2.3	3.2	3.2	3.3	3.4	3.4
Capital/Other	22.3	26.8	26.9	25.2	18.8	16.5
<b>Total</b>	<b>107.5</b>	<b>118.3</b>	<b>118.1</b>	<b>122.4</b>	<b>123.3</b>	<b>124.6</b>
<b>Capital Expenditures</b>						
Debt-Funded	0.0	0.0	0.0	0.0	0.0	0.0
Revenue-Funded	13.5	18.5	23.4	22.0	18.6	17.4
Third Party or Proceeds-Funded	3.4	1.8	0.5	0.0	0.0	0.0
<b>Total Capital</b>	<b>\$ 16.9</b>	<b>20.3</b>	<b>23.9</b>	<b>22.0</b>	<b>18.6</b>	<b>17.4</b>



# LCRA Capital Plan – by Status

- Approval of this capital plan authorizes the initiation of all recommended projects at their individually stated lifetime budgets as shown in the plan.
- Board approval of this plan also authorizes the proposed \$435.3 million budget for fiscal year 2020 capital spending, which includes \$86.6 million for recommended projects and \$348.7 million for projects the Board approved previously.

## FY 2020-FY 2024 Capital Spending for Recommended, Approved and Future Projects LCRA Total (Including Austin Energy's Share and the City of San Marcos' Share)

(Dollars in millions)

	Budgeted Proposed		Forecast				Five-Year	
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total	Lifetime
Recommended Projects	\$	86.6	132.5	58.3	1.2	0.7	279.3	279.4
Approved Projects		348.7	195.1	95.1	52.1	2.8	693.8	1,495.1
Subtotal Recommended and Approved		435.3	327.6	153.4	53.3	3.5	973.1	1,774.5
Future Projects		-	109.3	245.4	208.1	203.1	765.8	999.9
<b>Total FY 2020 Capital Plan</b>		435.3	436.8	398.8	261.4	206.6	1,738.9	2,774.4
Less: Co-owners' Shares		4.0	1.7	4.8	1.5	0.6	12.7	21.1
LCRA's Share		431.2	435.1	394.0	259.9	206.0	1,726.2	2,753.3
<b>Comparison to Previous Plan</b>								
Total FY 2019 Capital Plan (with co-owners)		380.1	380.0	346.2	215.5	178.5	1,500.4	2,081.5
Difference*	\$	n/a	(55.3)	(90.6)	(183.3)	(82.9)	n/a	(692.9)

\* Difference for five-year total is based on a rolling five-year comparison, i.e., FY 2020-FY 2024 spending from the current plan compared to FY 2019-FY 2023 from the plan the Board approved in May 2018 (not compared to the amended FY 2019 spending limit the Board approved in January 2019 for LCRA TSC).

# LCRA Capital Plan – by Business

- LCRA's share of the total FY 2020 capital budget for recommended and approved projects is \$431.2 million. LCRA estimates it will fund about 30% of that amount with revenue.
- LCRA's share of the five-year total capital budget, including recommended, approved and future projects, is \$1.7 billion. LCRA estimates it will fund about 42% of that amount with revenue.
- LCRA is using previously reserved funds to fund and accelerate certain critical infrastructure capital projects throughout the organization.
- LCRA is requesting approval of the Public Recreation and Conservation Land Acquisition Fund to fund capital in the first three years of the plan.

(Dollars in millions)

	Budgeted	Proposed	Forecast			
			FY 2019*	FY 2020	FY 2021	FY 2022
<b>LCRA Capital Expenditures</b>						
<u>Revenue-Funded</u>						
Wholesale Power and Nonprofit Corporations	\$ 11.2	24.8	17.0	17.2	12.5	13.0
LCRA TSC	54.0	52.4	69.5	71.2	125.3	130.4
Water	2.2	3.2	8.3	9.0	9.0	7.8
Enterprise Support	13.5	18.5	23.4	22.0	18.6	17.4
Public Services	1.7	2.3	2.4	2.3	2.3	2.3
Strategic Services	-	0.5	0.2	0.2	0.2	0.4
	82.6	101.7	120.7	121.8	167.8	171.3
<u>Debt-Funded</u>						
LCRA TSC	382.5	288.7	299.6	249.3	71.4	22.8
Water	44.9	11.9	4.8	18.6	18.6	10.6
Strategic Services	-	1.4	0.6	1.5	-	-
	427.4	302.1	305.1	269.4	90.0	33.4
<u>Third Party / Proceeds-Funded</u>						
Wholesale Power and Nonprofit Corporations	1.9	1.9	0.4	-	-	0.7
LCRA TSC	0.0	0.7	-	-	-	-
Water	5.0	21.3	6.9	1.2	-	-
Enterprise Support	3.4	1.8	0.5	-	-	-
Public Services	-	1.7	1.5	1.6	2.1	0.5
	10.4	27.4	9.3	2.8	2.1	1.2
<b>Total LCRA Capital</b>	<b>\$ 520.3</b>	<b>431.2</b>	<b>435.1</b>	<b>394.0</b>	<b>259.9</b>	<b>206.0</b>

\* The LCRA Board of Directors in January 2019 approved the amended capital spending limit for LCRA TSC for FY 2019.

# LCRA Capital Plan – Approach

## Capital Planning Approach

LCRA includes projects in the capital plan with the goal of ensuring LCRA can continue to offer its customers energy, water and public services in a reliable, competitively priced, environmentally responsible and safe manner. Each project undergoes a thorough review by LCRA's Asset Management work group and other staff members who separate the projects into three categories: recommended (projects management has reviewed and recommended for Board approval); approved (projects the Board approved previously); and future (projects staff may recommend implementing within the next five years).

Staff does not submit future projects for Board approval at this time but includes them in this document for strategic planning purposes. The cost and timing of future projects presented in this document could change. For this reason, LCRA repeats the capital planning process annually and updates the plan as necessary. LCRA will bring future projects back to the Board for approval.

## Determining Need and Financial Analysis

Capital plan projects must support the goals of the business plan within financial parameters established by LCRA's Board and chief financial officer.

LCRA includes projects based on multiple factors, such as current and anticipated demand for LCRA's services and the need to maintain or build facilities or infrastructure to meet those demands. Other factors include compliance with applicable state and federal regulations, safety and security needs, the potential for increased revenues, and better management and protection of natural resources.

Staff has reviewed and analyzed the recommended projects rigorously. The project criteria may vary, but typically will involve either a payback period test, net present value analysis or other analyses to ensure the project is the most cost-effective approach. Executive management reviews each project to ensure the project warrants funding and inclusion in the capital plan. When appropriate, affected customers and stakeholders have the opportunity to review and comment on the proposed project scope and budget.

# LCRA Capital Plan – Approach (Continued)

## Developing Project Estimates

LCRA staff develops project cost estimates using one of three estimating levels: preliminary, budgetary or final.

An estimate's accuracy is based on identifying the work and resources necessary to complete the project objectives. Cost estimates are revised and become more accurate as more information regarding the scope and deliverables is available.

The capital planning cycle involves these steps:

- Developing and refining a list of business needs based on planning criteria and asset owner input.
- Defining the scope and approach necessary to address those needs.
- Obtaining cost estimates and performing business analyses to establish a proposed project budget and to evaluate affordability, economic viability, portfolio prioritization and risk.
- Seeking approval of the capital plan to validate strategic direction, establish lifetime and fiscal year budgets, and allow business planning for the future.

LCRA generally recommends projects to the Board for approval using a budgetary estimate. LCRA may recommend some projects using preliminary estimates because of the timing in determining the specific technology that would be implemented. Projects recommended in this plan at a preliminary estimate are noted in the project description.

Regardless of the estimating level or the method used to generate the cost estimate, LCRA Board Policy 301 – Finance and LCRA TSC Board Policy T301 – Finance require LCRA and LCRA TSC to bring previously authorized projects to the Board for additional review and approval if staff expects the projects to exceed the Board-approved lifetime budget by 10% and \$300,000. The LCRA TSC Board has delegated this authority for LCRA TSC capital projects to the LCRA TSC president and chief executive officer through Dec. 31, 2019.

## Project Prioritization

LCRA reviews and prioritizes its projects based on criteria that include safety, cost, reliability, competitiveness, environmental considerations and other factors. The appropriate executive reviews staff recommendations.



# LCRA Capital Plan – Approach (Continued)

## Project Prioritization (Continued)

Projects that are essential to ensure the continued reliable and cost-effective delivery of LCRA services, concern public safety or limit interruption of services receive the highest priority. LCRA also assigns higher priority to projects with regulatory issues that may result in substantial financial impacts for noncompliance, projects already in progress that have a substantial cost to stop, and projects with contractual requirements that could have substantial financial impacts to LCRA.

Medium priority projects include those in progress that have a moderate financial impact associated with stopping them or have contractual, regulatory or reliability issues that would have a moderate to minimal financial or health and safety impact to LCRA, customers and stakeholders.

A lower priority project is not unimportant to LCRA or to stakeholders. Staff may assign lower priority rankings to projects that have a more moderate monetary or stakeholder impact and would have minimal impacts to safety, the environment, contractual obligations or revenue if they were stopped or delayed.

## Project Approval and Monitoring

LCRA brings each capital project recommended to begin in the next fiscal year to the LCRA Board for approval with this plan. Board approval authorizes the release of funds to execute the identified projects. However, executives may authorize funding in stages or all at once for the entire project.

From time to time, conditions change rapidly and may create a need for immediate action. The LCRA general manager and CEO and the LCRA TSC president and CEO, under LCRA Board Policy 301 – Finance and LCRA TSC Board Policy T301 – Finance, have the authorization to approve any capital project with a lifetime budget not to exceed \$1.5 million, provided the new projects remain within fiscal year spending limits. Asset Management staff provides quarterly capital project reports to the Board that include any new projects approved by the LCRA general manager and CEO and the LCRA TSC president and CEO. Staff will present projects exceeding the LCRA general manager and CEO and LCRA TSC president and CEO authorization limits to the Board for approval.

# LCRA Capital Plan – Approach (Continued)

## Project Approval and Monitoring (Continued)

Project Management staff provides to LCRA's executives quarterly capital project status reports on approved projects. Reports include cost variances, estimated completion dates, comparisons of work completed to budget spent, fiscal year spending forecasts and project estimates at completion compared to the current capital plan. The reports also highlight any significant changes to the capital program, including project cancellations, delays and budget-to-actual expenditures.

## Contingency

Contingency refers to a dollar amount added to a project's spending estimate to address items that are unknown when the estimate is prepared. This dollar amount often is based on a percentage of total construction or project costs, and the percentage often is based on the amount of planning and scope definition available at the time of the estimate. LCRA staff estimates and manages many different types of projects, including those for major wholesale power facilities, new electric transmission lines, dam and hydroelectric upgrades, water delivery and utilities, telecommunication facilities, software system installations, park developments, and facility improvements. Despite this diversity of project types, LCRA has arrived at certain standards for estimating, reporting and managing contingency for all of LCRA's capital projects.

LCRA discloses contingency amounts for all capital projects other than general additions and minor capital, which include multiple projects that may have different contingency amounts. Staff also discloses contingency for each recommended and approved project to the chief financial officer during the annual planning process. LCRA submits the capital plan, including the contingency amount in each recommended project lifetime budget, for Board review and approval as shown in the following pages.

Individual project managers manage contingency amounts included in the lifetime budgets in accordance with LCRA standards as part of the overall budgets for the projects. LCRA staff monitors the status of contingencies on all projects and provides reports at least quarterly to executive management.

# LCRA Capital Plan – Approach (Continued)

## Capital Plan Approval and Reporting

LCRA Board approval of this capital plan authorizes the initiation of all recommended projects at their individually stated lifetime budgets. These recommended projects include annual budgets for general additions and minor capital. General additions are small capital additions or replacement projects that do not exceed \$300,000. Minor capital budgets are used to fund purchases of equipment that, essentially, is ready to place in service upon delivery, such as fleet assets or technology hardware.

Board approval of this plan also authorizes the proposed \$435.3 million budget for FY 2020 capital spending for recommended and approved projects.

LCRA incorporates spending projections in the capital plan into the financial performance and rate impacts shown in the business plan. Upon approval and throughout FY 2020, LCRA will provide to the Board regular reports on project progress and compliance with the project budgets and fiscal year spending constraints established in the plan.

The following pages include specific project details and proposed lifetime budgets for recommended projects, as well as annual spending projections for approved and future projects. At this time, LCRA is not seeking Board approval for future projects. LCRA will bring any future project determined to require initiation in FY 2020 to the Board for approval individually.

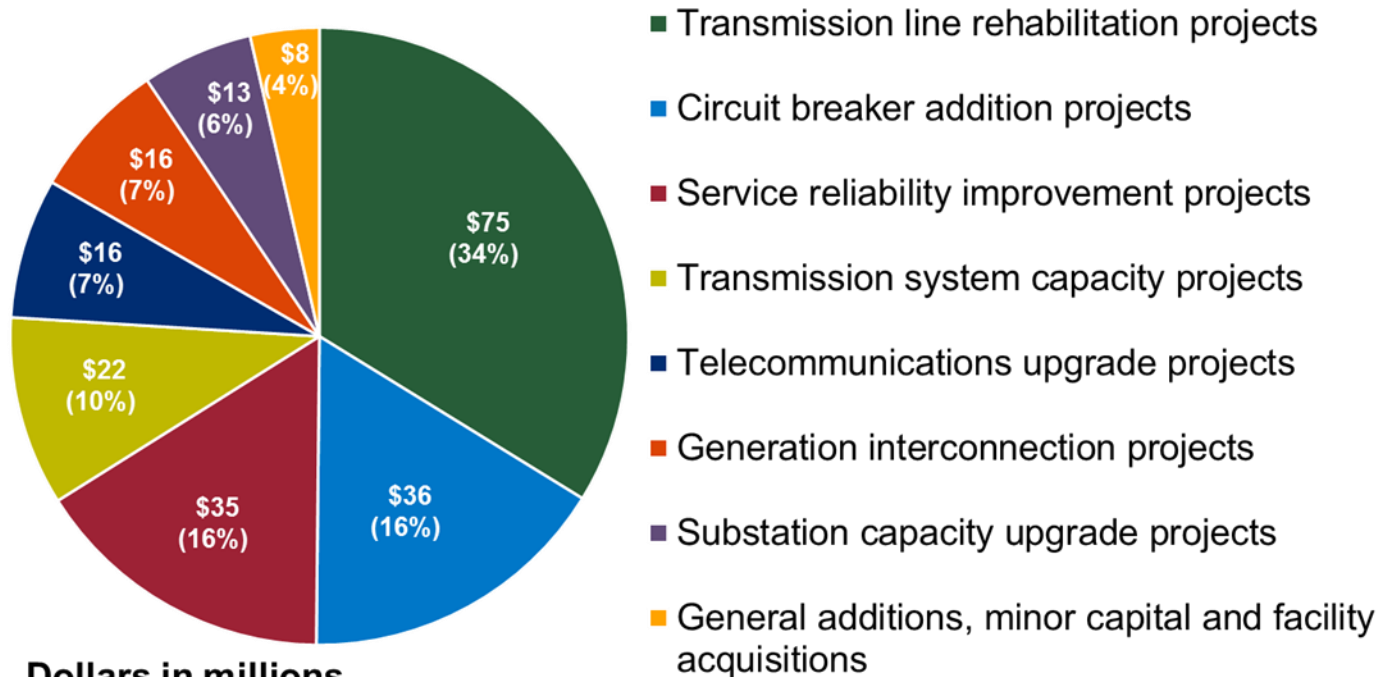
# Wholesale Power Projects

Information about Wholesale Power capital projects included in the capital plan is considered confidential and has been removed from this version of the document.

# Transmission Projects

The LCRA capital plan includes all capital projects approved separately in the LCRA TSC capital plan by the LCRA TSC Board of Directors. The transmission projects address transmission electric system reliability requirements, respond to ERCOT system needs, meet projected area load growth, respond to existing customer needs and connect new generators to the LCRA TSC electric system. Recommended and approved transmission projects total \$341.9 million in FY 2020 and \$833.6 million over the next five years through FY 2024. Future projects total \$547.9 million through FY 2024. Lifetime budgets for recommended LCRA TSC projects total about \$221.3 million.

## LCRA TSC Recommended Projects Lifetime Budgets by Category





# Transmission Projects (Continued)

## LCRA TSC FY 2020 Requested Project Budget Increases

**Bakersfield to Solstice Transmission Line Addition (lifetime budget of \$78.1 million)** – LCRA TSC requests approval to increase the Bakersfield to Solstice Transmission Line Addition project's previously approved lifetime budget by \$31.7 million from \$46.4 million to \$78.1 million. The LCRA TSC Board initially approved the project as an addendum to the FY 2018 capital plan. The budget increase is due to ERCOT adding a second 345-kilovolt circuit on the 35-mile transmission line, which resulted in additional substation costs. The project is a portion of the larger ERCOT Far West Texas Project, which is intended to serve the increased loads driven by industrial oil and gas-related development in the Permian Basin. LCRA TSC's project requires a Certificate of Convenience and Necessity, and the PUC is expected to issue its final order before the end of FY 2019.

**Garfield Battery Bank Substation Upgrade (lifetime budget of \$1.5 million)** – LCRA TSC requests approval to increase the Garfield Battery Bank Substation Upgrade project's previously approved lifetime budget by \$1.25 million from \$251,000 to \$1.5 million. The LCRA TSC Board initially approved the project in the FY 2019 capital plan. Austin Energy owns the control house and batteries at the Garfield Substation and shared them with LCRA TSC. The original project scope was for LCRA TSC to construct a separate stand-alone battery house. After the project was approved, Austin Energy requested LCRA TSC build a larger control house and move all LCRA TSC substation equipment from the Austin Energy-owned control house. The project is needed to improve the safety and reliability of the Garfield Substation.

# Transmission Projects (Continued)

## LCRA TSC FY 2020 Recommended Projects

**Andice to Bertram to Burnet Transmission Line Upgrade (lifetime budget of \$10.236 million)** – The project will increase the transmission capacity and reliability of the 23.2-mile Andice to Bertram to Burnet 69-kV transmission line in Burnet and Williamson counties. The project’s scope includes upgrading bus and terminal equipment to convert the transmission line to 138-kV operation and improve reliability in the area. The recommended project completion date is May 15, 2021.

**Autotransformer Monitoring – FY 2020 Substation Upgrade (lifetime budget of \$399,000)** – The project will increase the reliability of substation equipment by installing additional apparatus monitoring equipment and establishing online monitoring capabilities at the Nada, Gillespie and Bergheim substations in Colorado, Comal and Gillespie counties. The recommended project completion date is May 15, 2020.

**Backbone Bandwidth Telecommunications Upgrade (lifetime budget of \$1.466 million)** – The project will replace telecommunications equipment such as routers and add new telecommunications equipment to maintain reliability and increase the capacity of the eastern and western fiber backbone rings. The recommended project completion date is June 30, 2021.

**Battery Systems – FY 2020 Substation Upgrade (lifetime budget of \$958,000)** – The project will increase the reliability and safety of substation equipment by replacing batteries and battery chargers at the Mesa View Switchyard and the Bitter Creek, Fort Lancaster, Fredericksburg, Hays Energy, New Bremen, Smithville, Turtle Creek and Verde Creek substations in Austin, Bastrop, Gillespie, Hays and Kerr counties. The recommended project completion date is May 15, 2020.

**Bellville South to Prairie View Transmission Line Upgrade (lifetime budget of \$2.601 million)** – The project will increase the transmission capacity and reliability of the 26.1-mile Bellville South to Prairie View 69-kV transmission line in Austin and Waller counties. The project’s scope includes upgrading bus and terminal equipment to convert the transmission line to 138-kV operation and improve reliability in the area. The recommended project completion date is May 15, 2021.

# Transmission Projects (Continued)

## LCRA TSC FY 2020 Recommended Projects (Continued)

**Burnet to Lampasas Transmission Line Overhaul (lifetime budget of \$12.96 million)** – The project will support the safe and reliable operation of the transmission network by replacing structures on the 23.4-mile Burnet to Lampasas 138-kV transmission line in Burnet and Lampasas counties. The new structures will improve reliability and support higher-capacity bundled conductor. The project's scope also includes installing optical ground wire and protective relaying improvements. The recommended project completion date is May 15, 2021.

**Clear Fork to Lockhart Transmission Line Overhaul (lifetime budget of \$3.913 million)** – The project will increase the transmission capacity and reliability of the 3-mile Clear Fork to Lockhart 69-kV transmission line in Caldwell County. The project will support the safe and reliable operation of the transmission network by replacing structures, which will have a 138-kV rating. The project's scope also includes installing new higher-capacity conductor and optical ground wire. The recommended project completion date is May 15, 2022.

**Clear Fork to Robert Brown Jr. Transmission Line Overhaul (lifetime budget of \$8.731 million)** – The project will increase the transmission capacity and reliability of the 8.8-mile Clear Fork to Robert Brown Jr. 69-kV transmission line in Caldwell County. The project will support the safe and reliable operation of the transmission network by replacing structures, which will have a 138-kV rating. The project's scope also includes installing new higher-capacity conductor and optical ground wire. The recommended project completion date is May 15, 2022.

# Transmission Projects (Continued)

## LCRA TSC FY 2020 Recommended Projects (Continued)

**Constellation Microwave Radio Telecommunications Upgrade (lifetime budget of \$700,000)** – The project will improve the performance of the LCRA TSC telecommunications transport network in Burleson, Burnet, DeWitt, Goliad, Hays, Lampasas, Travis and Washington counties. The project's scope includes replacing microwave radio equipment with upgraded equipment. The upgraded equipment will provide the Ethernet connectivity necessary to support the radio system migration to multiprotocol label switching at these sites, as well as upgraded alarm monitoring and system management functionality. The recommended project completion date is Aug. 31, 2020.

**Coronado to Sherwood Shores Transmission Line Storm Hardening (lifetime budget of \$12.001 million)** – The project will improve the safety and reliability of the transmission network by replacing structures on the Coronado to Sherwood Shores 138-kV transmission line in Burnet and Llano counties to improve reliability. The project scope also includes replacing conductor with new conductor of the same rating. The recommended project completion date is May 15, 2021.

**Crane Circuit Breaker Addition (lifetime budget of \$1.396 million)** – The project will accommodate the termination point of a new 138-kV transmission line at Crane Substation in Crane County by installing an additional circuit breaker and associated relay and control equipment to provide a new interconnection point with American Electric Power. The recommended project completion date is Nov. 30, 2020.

**Divide Roadway Substation Upgrade (lifetime budget of \$949,000)** – The project will rebuild the existing roadway from a public access point to the Divide Substation in Coke County to improve the safety, ease and efficiency of access to the facility for workers to operate and maintain transmission equipment. The recommended project completion date is Aug. 31, 2020.

# Transmission Projects (Continued)

## LCRA TSC FY 2020 Recommended Projects (Continued)

**Ferguson to Sherwood Shores Transmission Line Storm Hardening (lifetime budget of \$3.368 million)** – The project will improve the safety and reliability of the transmission network by replacing structures on the 3.5-mile Ferguson to Sherwood Shores 138-kV transmission line in Burnet and Llano counties to improve reliability. The project scope also includes replacing conductor with new conductor of the same rating. The recommended project completion date is May 15, 2021.

**Frelsburg Circuit Breaker Addition (lifetime budget of \$7.736 million)** – The project will improve the reliability of transmission facilities at the Frelsburg Substation in Colorado County by installing breakers in a ring bus configuration that allows the substation to remain in service during transmission line faults. The project's scope also includes implementing physical security improvements and a requirement to acquire additional property. The recommended project completion date is May 15, 2021.

**Gabriel Substation Upgrade (lifetime budget of \$18.829 million)** – The project will increase the reliability of substation equipment by replacing oil circuit breakers, replacing relay and control equipment, adding physical security improvements and replacing equipment at the Gabriel Substation in Williamson County. The substation bus configuration also will be converted to a more reliable and maintainable breaker-and-a-half configuration. The recommended project completion date is May 15, 2022.

**Gabriel to Glasscock Transmission Line Storm Hardening (lifetime budget of \$2.099 million)** – The project will improve the safety and reliability of the transmission network by replacing structures on the 6.6-mile Gabriel to Glasscock 138-kV transmission line in Williamson County to improve reliability. The project's scope also includes adding optical ground wire and removing older microwave equipment. The recommended project completion date is May 15, 2021.



# Transmission Projects (Continued)

## LCRA TSC FY 2020 Recommended Projects (Continued)

**Gabriel to Rivery Transmission Line Storm Hardening (lifetime budget of \$8.59 million)** – The project will improve the safety and reliability of the transmission network by replacing structures on the 2.4-mile Gabriel to Rivery 138-kV transmission line in Williamson County to improve reliability. The project’s scope also includes installing optical ground wire. The recommended project completion date is May 15, 2021.

**General Additions (lifetime budget of \$4 million)** – The project will fund required but unplanned system improvements to accommodate load increases, equipment needs, substation reliability enhancements, customer requests or changing system conditions as needed through June 30, 2020.

**Graphite Mine Circuit Breaker Addition (lifetime budget of \$11.141 million)** – The project will improve the reliability of transmission facilities at the Graphite Mine Substation in Burnet County by installing breakers in a ring bus configuration that allows the substation to remain in service during transmission line faults. The project’s scope also includes installing optical ground wire and implementing physical security improvements. The project also will require acquiring additional property. The recommended project completion date is May 15, 2022.

**Harris Branch to McNeil Transmission Line Relocation (lifetime budget of \$621,000)** – The project will relocate a portion of the Harris Branch to McNeil 138-kV transmission line in Travis County to accommodate Austin Energy’s future Northeast Substation addition project. The recommended project completion date is May 15, 2020.

**Harris Remote Terminal Unit Telecommunications Upgrade (lifetime budget of \$456,000)** – The project will improve the Telecommunications Operations Control Center’s ability to remotely control and monitor substation equipment by upgrading remote terminal units and associated telecommunications equipment at 35 sites in 18 counties. The recommended project completion date is Aug. 31, 2020.

# Transmission Projects (Continued)

## LCRA TSC FY 2020 Recommended Projects (Continued)

**Hayter Ranch Substation Upgrade (lifetime budget of \$5.456 million)** – The project will increase the reliability of substation equipment by upgrading temporary transformation facilities with a permanent load-serving 22.4-megavolt amperes power transformer and associated facilities at Hayter Ranch Substation in Pecos County. The project's scope also includes control house, relay and control, and metering facilities. The recommended project completion date is May 15, 2021.

**Hi Cross to Turnersville Transmission Line Storm Hardening (lifetime budget of \$2.852 million)** – The project will improve the safety and reliability of the transmission network by replacing structures on the 8.8-mile Hi Cross to Turnersville 138-kV transmission line in Hays and Travis counties to improve reliability. The recommended project completion date is May 15, 2021.

**Hidden Valley to McNeil Transmission Line Relocation (lifetime budget of \$493,000)** – The project will relocate a portion of the Hidden Valley to McNeil 138-kV transmission line in Travis County to accommodate Austin Energy's Balcones Substation reliability upgrade. The recommended project completion date is May 15, 2020.

**Kempner Circuit Breaker Addition (lifetime budget of \$9.152 million)** – The project will improve the reliability of transmission facilities at the Kempner Substation in Lampasas County by installing breakers in a ring bus configuration that allows the substation to remain in service during transmission line faults. The project's scope also includes installing optical ground wire, adding an access road and implementing physical security improvements. The project will require acquiring additional property. The recommended project completion date is May 15, 2022.

**LCRA TSC Fiber Build-out – FY 2020 Telecommunications Upgrade (lifetime budget of \$9.459 million)** – The project will increase the reliability and capability of the fiber network in Bastrop, Blanco, Hays, Travis, Waller and Washington counties by adding optical ground wire and related telecommunications equipment to six LCRA TSC transmission lines. The recommended project completion date is May 15, 2021.

# Transmission Projects (Continued)

## LCRA TSC FY 2020 Recommended Projects (Continued)

**Leakey Substation Upgrade (lifetime budget of \$1.05 million)** – The project will upgrade transmission substation facilities at Leakey, Utopia and Tarpley substations in Bandera and Real counties to accommodate Bandera Electric Cooperative’s transmission line upgrade. The upgraded substation facilities will be capable of 138-kV operation. The recommended project completion date is May 15, 2020.

**Luling to Zorn Transmission Line Overhaul (lifetime budget of \$13.572 million)** – The project will increase the transmission capacity and reliability of the 28.3-mile Luling to Zorn 138-kV transmission line in Caldwell and Guadalupe counties and support the safe and reliable operation of the transmission network by replacing structures. The project scope also includes installing new higher-capacity conductor and optical ground wire. The recommended project completion date is May 15, 2021.

**Marion Substation Asset Purchase (lifetime budget of \$594,000)** – The project scope is to acquire 345-kV circuit breakers and upgrade associated transmission equipment at the Marion Substation. The recommended project completion date is May 15, 2020.

**Minor Capital (lifetime budget of \$3.451 million)** – The scope of minor capital projects is to purchase equipment that, essentially, is ready to place in service upon delivery for projects related to transmission lines, substations or related equipment.

**Multiprotocol Label Switching Network Core – FY 2020 Telecommunications Upgrade (lifetime budget of \$1.25 million)** – The project will improve the performance of LCRA TSC’s telecommunications transport network. The project’s scope of work includes replacing multiprotocol label switching network core routers at the System Operations Control Center and the General Office Complex. The recommended project completion date is June 30, 2020.

# Transmission Projects (Continued)

## LCRA TSC FY 2020 Recommended Projects (Continued)

**Multiprotocol Label Switching Protective Relaying Telecommunications Upgrade (lifetime budget of \$279,000)** – The project will improve the reliability of the transmission network in Blanco, Burnet, Caldwell, Gillespie, Kendall, Llano and Travis counties by replacing protective relaying time domain multiplexing circuits with multiprotocol label switching-based circuits. The project scope also includes upgrading multiprotocol label switching router equipment and substation clocks. The recommended project completion date is June 30, 2020.

**Naruna Circuit Breaker Addition (lifetime budget of \$3.991 million)** – The project will improve the reliability of transmission facilities at the Naruna Substation in Lampasas County by installing breakers in a ring bus configuration that allows the substation to remain in service during transmission line faults. The project's scope also includes implementing physical security improvements. The recommended project completion date is May 15, 2021.

**Obsolete Circuit Breaker Replacement – FY 2020 Substation Upgrade (lifetime budget of \$5.939 million)** – The project will increase the safety and reliability of substation equipment at the Fayette Power Project's 138-kV switchyard and the Fayetteville, McCarty Lane, Salem, Spicewood and Zorn substations in Fayette, Hays, Guadalupe and Travis counties. The project's scope includes replacing oil circuit breakers, surge arrestors and associated equipment with gas circuit breakers and associated equipment. The recommended project completion date is May 15, 2021.

**Out-of-Band Management Switch Telecommunications Upgrade (lifetime budget of \$695,000)** – The project will upgrade telecommunications hardware associated with the network used to control, monitor and troubleshoot devices that support LCRA TSC's telecommunications transport network and transmission operations. The recommended project completion date is June 30, 2020.

# Transmission Projects (Continued)

## LCRA TSC FY 2020 Recommended Projects (Continued)

**Physical Security – FY 2020 Substation Upgrade (lifetime budget of \$3.53 million)** – The project will improve transmission grid security by implementing physical security measures and related telecommunications system improvements for 17 LCRA TSC-owned substations in various counties throughout LCRA TSC’s service area. The recommended project completion date is June 30, 2021.

**Pooley Road Circuit Breaker Addition (lifetime budget of \$4.265 million)** – The project will improve the reliability of transmission facilities at the Pooley Road Substation in Guadalupe County by installing breakers in a ring bus configuration that allows the substation to remain in service during transmission line faults. The project’s scope also includes implementing physical security improvements. The recommended project completion date is May 15, 2021.

**Rattler Substation Addition (lifetime budget of \$4.627 million)** – The project scope is to construct a new load-serving substation for San Marcos Electric Utility in Hays County. The Rattler Substation will be interconnected via LCRA TSC’s 138-kV Redwood to McCarty Lane transmission line. The recommended project completion date is Nov. 30, 2020.

**Remote Terminal Unit Multiprotocol Label Switching Migration – FY 2020 Telecommunications Upgrade (lifetime budget of \$1.487 million)** – The project will upgrade telecommunications equipment used to connect to 46 remote terminal units that allow the System Operations Control Center to remotely control and monitor substation equipment. The project will allow for the retirement of legacy telecommunications equipment at substations in 13 counties and will free up equipment to use as spares until other systems are upgraded. The recommended project completion date is June 30, 2021.



# Transmission Projects (Continued)

## LCRA TSC FY 2020 Recommended Projects (Continued)

**Robert Brown Jr. to San Marcos Transmission Line Overhaul (lifetime budget of \$6.306 million)** – The project will increase the transmission capacity and reliability of the 4.9-mile Robert Brown Jr. to San Marcos 69-kV transmission line in Caldwell and Hays counties. The project will support the safe and reliable operation of the transmission network by replacing structures, which will have a 138-kV rating. The project scope also includes installing new higher-capacity conductor and optical ground wire. The recommended project completion date is May 15, 2022.

**San Angelo Area Microwave Telecommunications Upgrade (lifetime budget of \$194,000)** – The project will improve the performance of LCRA TSC's telecommunications transport network in Tom Green County associated with the new LCRA TSC San Angelo Maintenance Facility. The project scope includes adding microwave transport and multiprotocol label switching equipment at a third-party site in Christoval. The recommended project completion date is June 30, 2020.

**Swiftex Substation Upgrade (lifetime budget of \$2.848 million)** – The project will increase the capacity and reliability of equipment at the Swiftex Substation in Bastrop County by upgrading the 22.4-megavolt ampere power transformer to a 33.6-MVA power transformer to accommodate anticipated load growth in Bluebonnet Electric Cooperative's service territory. The project's scope also includes implementing physical security improvements. The recommended project completion date is May 15, 2021.

**Switch Replacement – FY 2020 Substation Upgrade (lifetime budget of \$1.477 million)** – The project will increase the safety and reliability of substation equipment by replacing transmission switches at Bee Creek, Boerne, Friendship, Kerrville Stadium, Marshall Ford and Spicewood substations in Hays, Kendall, Kerr and Travis counties. The recommended project completion date is May 15, 2021.

# Transmission Projects (Continued)

## LCRA TSC FY 2020 Recommended Projects (Continued)

**Transmission Metering – FY 2020 Substation Upgrade (lifetime budget of \$2.06 million)** – The project will increase the reliability and capability of substation equipment by replacing revenue-metering equipment and adding telecommunications circuits for meter data connectivity. The recommended project completion date is May 15, 2023.

**Transport Network Power – FY 2020 Telecommunications Upgrade (lifetime budget of \$334,000)** – The project will increase the reliability of the LCRA TSC telecommunications transport network by replacing battery charger systems at 11 locations in Austin, Bastrop, Caldwell, Fayette, Guadalupe, Kerr, Matagorda, Travis and Williamson counties. The project scope also includes adding batteries at two sites to support equipment load requirements. The recommended project completion date is Aug. 31, 2020.

**Ute Pass Substation Addition (lifetime budget of \$16.074 million)** – The project scope is to construct a new point of interconnection for a generator that has requested a connection to the ERCOT grid. The Ute Pass Substation will be interconnected via LCRA TSC's 345-kV Twin Buttes to Brown transmission line. The recommended project completion date is April 1, 2021.

**Zorn Autotransformer Replacement (lifetime budget of \$6.694 million)** – The project will increase the reliability of substation equipment by replacing a 477.7-megavolt ampere and 345-kV autotransformer with a new autotransformer and associated equipment at Zorn Substation in Guadalupe County. The recommended project completion date is May 15, 2021.

# Transmission Projects (Continued)

## LCRA Transmission Services Corporation FY 2020 Capital Plan Recommended Projects

(Dollars in thousands)

Project Name	Contingency	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Five-Year Total	Lifetime
<b>Recommended</b>								
Andice-Bertram-Burnet Transmission Line Upgrade	0%	851	9,387	-	-	-	10,238	10,238
Autotransformer Monitoring – FY 2020 Substation Upgrade	0%	399	-	-	-	-	399	399
Backbone Bandwidth Telecommunications Upgrade	0%	733	733	-	-	-	1,466	1,466
Battery Systems – FY 2020 Substation Upgrade	0%	958	-	-	-	-	958	958
Bellville South-Prairie View Transmission Line Upgrade	0%	520	2,081	-	-	-	2,601	2,601
Burnet-Lampasas Transmission Line Overhaul	0%	668	12,292	-	-	-	12,960	12,960
Clear Fork-Lockhart Transmission Line Overhaul	0%	269	242	3,402	-	-	3,913	3,913
Clear Fork-Robert Brown Jr. Transmission Line Overhaul	0%	303	65	8,363	-	-	8,731	8,731
Constellation Microwave Radio Telecommunications Upgrade	0%	351	349	-	-	-	700	700
Coronado-Sherwood Shores Transmission Line Storm Hardening	0%	563	11,438	-	-	-	12,001	12,001
Crane Circuit Breaker Addition	0%	435	961	-	-	-	1,396	1,396
Divide Roadway Substation Upgrade	0%	321	628	-	-	-	949	949
Ferguson-Sherwood Shores Transmission Line Storm Hardening	0%	450	2,918	-	-	-	3,368	3,368
Frelsburg Circuit Breaker Addition	0%	653	7,083	-	-	-	7,736	7,736
Gabriel Substation Upgrade	0%	421	846	17,562	-	-	18,829	18,829
Gabriel-Glasscock Transmission Line Storm Hardening	0%	391	1,708	-	-	-	2,099	2,099
Gabriel-Rivery Transmission Line Storm Hardening	0%	674	7,916	-	-	-	8,590	8,590
General Additions		4,000	-	-	-	-	4,000	4,000
Graphite Mine Circuit Breaker Addition	0%	475	630	10,036	-	-	11,141	11,141
Harris Branch-McNeil Transmission Line Relocation	0%	621	-	-	-	-	621	621
Harris Remote Terminal Unit Telecommunications Upgrade	0%	342	114	-	-	-	456	456
Hayter Ranch Substation Upgrade	0%	602	4,854	-	-	-	5,456	5,456
Hi Cross-Turnersville Transmission Line Storm Hardening	0%	414	2,438	-	-	-	2,852	2,852
Hidden Valley-McNeil Transmission Line Relocation	0%	493	-	-	-	-	493	493
Kempner Circuit Breaker Addition	0%	551	505	8,096	-	-	9,152	9,152
LCRA TSC Fiber Build-out – FY 2020 Telecommunications Upgrade	0%	5,165	4,294	-	-	-	9,459	9,459

# Transmission Projects (Continued)

## LCRA Transmission Services Corporation FY 2020 Capital Plan Recommended and Approved Projects

(Dollars in thousands)

Project Name	Contingency	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Five-Year		
							Total	Lifetime	
<b>Recommended (continued)</b>									
Leakey Substation Upgrade	0%	1,050	-	-	-	-	1,050	1,050	
Luling-Zorn Transmission Line Overhaul	0%	748	12,824	-	-	-	13,572	13,572	
Marion Substation Asset Purchase	0%	594	-	-	-	-	594	594	
Minor Capital		3,451	-	-	-	-	3,451	3,451	
Multiprotocol Label Switching Network Core – FY 2020 Telecommunications Upgrade	0%	1,250	-	-	-	-	1,250	1,250	
Multiprotocol Label Switching Protective Relaying Telecommunications Upgrade	0%	279	-	-	-	-	279	279	
Naruna Circuit Breaker Addition	0%	426	3,565	-	-	-	3,991	3,991	
Obsolete Circuit Breaker Replacement – FY 2020 Substation Upgrade	0%	1,791	4,148	-	-	-	5,939	5,939	
Out-of-Band Management Switch Telecommunications Upgrade	0%	695	-	-	-	-	695	695	
Physical Security – FY 2020 Substation Upgrade	0%	1,230	2,300	-	-	-	3,530	3,530	
Pooley Road Circuit Breaker Addition	0%	530	3,735	-	-	-	4,265	4,265	
Rattler Substation Addition	0%	1,673	2,954	-	-	-	4,627	4,627	
Remote Terminal Unit MPLS Migration – FY 2020 Telecommunications Upgrade	0%	488	999	-	-	-	1,487	1,487	
Robert Brown Jr.-San Marcos Transmission Line Overhaul	0%	330	124	5,852	-	-	6,306	6,306	
San Angelo Area Microwave Telecommunications Upgrade	0%	194	-	-	-	-	194	194	
Swiftex Substation Upgrade	0%	408	2,440	-	-	-	2,848	2,848	
Switch Replacement – FY 2020 Substation Upgrade	0%	588	889	-	-	-	1,477	1,477	
Transmission Metering – FY 2020 Substation Upgrade	0%	515	515	515	515	-	2,060	2,060	
Transport Network Power – FY 2020 Telecommunications Upgrade	0%	156	178	-	-	-	334	334	
Ute Pass Substation Addition	0%	3,722	12,182	-	-	-	15,904	16,074	
Zorn Autotransformer Replacement	0%	457	6,237	-	-	-	6,694	6,694	
<b>Recommended Subtotal</b>		<b>42,198</b>	<b>124,572</b>	<b>53,826</b>	<b>515</b>	<b>-</b>	<b>221,111</b>	<b>221,281</b>	
<b>Approved</b>									
Amos Creek Substation Addition		11,836	-	-	-	-	11,836	12,821	
Asphalt Mines Substation Addition		489	1,907	-	-	-	2,396	2,416	
Bakersfield-Solstice Transmission Line Addition		48,665	22,637	-	-	-	71,302	78,100	

# Transmission Projects (Continued)

## LCRA Transmission Services Corporation FY 2020 Capital Plan Approved Projects

(Dollars in thousands)

Project Name	Contingency	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Five-Year Total	Lifetime
<b>Approved (continued)</b>								
Bellville South-Glidden Transmission Line Storm Hardening		26	-	-	-	-	26	6,589
Bellville South-Waller Transmission Line Storm Hardening		134	-	-	-	-	134	33,942
Boerne Cico-Comfort-Kendall Transmission Line Upgrade		11,624	1,992	-	-	-	13,616	14,094
Burnet-Wirtz Transmission Line Overhaul		1,652	-	-	-	-	1,652	3,472
Camp Wood-Leakey Transmission Line Overhaul		5,250	22,688	-	-	-	27,938	29,609
Castle Mountain Circuit Breaker Addition		1,146	-	-	-	-	1,146	1,733
Castle Mountain Substation Addition		2,560	-	-	-	-	2,560	3,139
Cedar Canyon Substation Addition		5,547	-	-	-	-	5,547	10,718
Central Texas Electric Cooperative Transmission Facility Acquisition		6	-	-	-	-	6	4,670
Colton Power Transformer Addition		1,484	-	-	-	-	1,484	2,085
Cooks Point Substation and Transmission Line Addition		3,190	22,754	11,893	-	-	37,837	39,457
Crosswinds Substation Addition		4,072	-	-	-	-	4,072	4,861
Culberson-Kunitz Transmission Line Overhaul		331	-	-	-	-	331	812
Cypress Creek Circuit Breaker Addition		46	-	-	-	-	46	3,826
Darst Creek Circuit Breaker Addition		12	-	-	-	-	12	4,249
Desert Mesa Circuit Breaker Addition		28	-	-	-	-	28	5,090
Dimmit Circuit Breaker Addition		500	4,349	-	-	-	4,849	5,108
Divide Circuit Breaker Addition		1,486	77	-	-	-	1,563	1,563
Easement Enhancement – FY 2019 System Upgrade		3,443	-	-	-	-	3,443	4,147
Energy Management System Upgrade – Phase 4 System Upgrade		278	-	-	-	-	278	8,000
Environmental Permitting System Upgrade		84	-	-	-	-	84	1,350
Esperanza Substation Addition		3,783	-	-	-	-	3,783	7,318
Fayette Area Transmission Line Upgrades		14,725	6,365	-	-	-	21,090	25,657
Fayette Power Project 138-kV-La Grange Transmission Line Overhaul		1,206	27	-	-	-	1,233	1,753
Fayetteville-Winchester Transmission Line Upgrade		11,693	60	-	-	-	11,753	12,528
Flatonía-Hallettsville Transmission Line Upgrade		6,470	-	-	-	-	6,470	7,740



# Transmission Projects (Continued)

## LCRA Transmission Services Corporation FY 2020 Capital Plan Approved Projects

(Dollars in thousands)

Project Name	Contingency	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Five-Year Total	Lifetime
<b>Approved (continued)</b>								
Flood Mitigation – FY 2018 System Upgrade		2,022	-	-	-	-	2,022	5,510
Garfield Battery Bank Substation Upgrade		1,078	-	-	-	-	1,078	1,500
Georgetown-Rivery Transmission Line Upgrade		716	-	-	-	-	716	1,642
Glidden Area Transmission Line Upgrade		2,621	-	-	-	-	2,621	19,995
Goldthwaite-Lampasas Transmission Line Overhaul		500	4,733	-	-	-	5,233	6,071
Gonzales-Harwood Transmission Line Overhaul		5,698	-	-	-	-	5,698	7,029
Gustav Substation Acquisition		17	5	8,846	-	-	8,868	8,775
Hamilton Road-Uvalde Fiber Addition		7	-	-	-	-	7	10,154
Harwood-Luling Double-Circuit Transmission Line Overhaul		25	-	-	-	-	25	9,485
Heines Substation Addition		1,424	-	-	-	-	1,424	4,312
Hext Substation Upgrade		2	953	-	-	-	955	983
Highway 36 Substation Upgrade		856	-	-	-	-	856	1,239
Horse Crossing-Rio Pecos Transmission Line Addition		1,099	-	-	-	-	1,099	2,399
Hurricane Response System Upgrade		2,143	-	-	-	-	2,143	3,193
Jim Briley Substation Addition		1,220	-	-	-	-	1,220	4,480
Kimbrow Substation Addition		3,559	1,000	-	-	-	4,559	4,510
King Mountain Circuit Breaker Addition		19	-	-	-	-	19	5,657
Kleimann Circuit Breaker Addition (formerly Columbus Circuit Breaker Addition)		3,400	-	-	-	-	3,400	4,108
La Grange-Plum Transmission Line Overhaul		110	-	-	-	-	110	2,196
LCRA TSC Fiber Build-out – FY 2018 Telecommunications Upgrade		21	-	-	-	-	21	28,400
LCRA TSC Fiber Build-out – FY 2019 Telecommunications Upgrade		6,006	10,763	7,148	-	-	23,917	31,898
Leander-Round Rock Transmission Line Addition		28,288	28	-	-	-	28,316	118,167
Lexington Circuit Breaker Addition		2,924	-	-	-	-	2,924	3,823
Lockhart Substation Upgrade		1,928	-	-	-	-	1,928	2,041
Magnolia Mercer Circuit Breaker Addition		2,200	2,700	-	-	-	4,900	5,131
Marble Falls Double Circuit Transmission Line Upgrade		2,770	-	-	-	-	2,770	3,374

# Transmission Projects (Continued)

## LCRA Transmission Services Corporation FY 2020 Capital Plan Approved Projects

(Dollars in thousands)

Project Name	Contingency	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Five-Year Total	Lifetime
<b>Approved (continued)</b>								
McCamey Area Easement Enhancement System Upgrade (formerly McCamey Area CCN System Upgrade)		1,460	258	-	-	-	1,718	2,098
Meadow Lake Substation Addition		2,665	24	-	-	-	2,689	2,963
Menger Creek Power Transformer Addition		1,741	-	-	-	-	1,741	2,483
Most Limiting Series Element – FY 2019 Substation Upgrade		249	-	-	-	-	249	645
Mountain Home Substation and Transmission Line Addition		759	29,673	35,226	10,593	-	76,251	79,089
Multiprotocol Label Switching Network Core Telecommunications Upgrade		191	-	-	-	-	191	477
New Bremen Circuit Breaker Addition		500	2,638	-	-	-	3,138	4,336
Obsolete Circuit Breaker Replacement – FY 2019 Substation Upgrade		876	-	-	-	-	876	2,279
Physical Security – FY 2019 Substation Upgrade		500	4,659	-	-	-	5,159	22,284
Pinnacle Circuit Breaker Addition		784	1,832	-	-	-	2,616	2,689
Pinnacle Substation Addition		11,973	5	-	-	-	11,978	12,852
Protective Relaying – FY 2019 System Upgrade		1,039	-	-	-	-	1,039	1,499
Ranch Road 12 Circuit Breaker Addition		500	2,493	-	-	-	2,993	3,952
RGEC Transmission Facilities Acquisition		6,904	-	-	-	-	6,904	6,285
Rim Rock-Turtle Creek Transmission Line Storm Hardening		500	7,549	-	-	-	8,049	8,622
Riverside Circuit Breaker Addition		910	-	-	-	-	910	4,294
Salem-Winchester Transmission Line Overhaul		6,150	-	-	-	-	6,150	7,084
Schneeman Draw Circuit Breaker Addition		4,380	-	-	-	-	4,380	5,105
Soda Lake Circuit Breaker Addition		784	979	-	-	-	1,763	1,848
Soda Lake Substation Addition		2,452	-	-	-	-	2,452	3,548
Sonne Substation Addition		2,881	-	-	-	-	2,881	3,810
Study Butte Substation and Transmission Line Addition		1,011	2,000	20,000	36,521	-	59,532	87,127
Summit T161 Transmission Line Relocation		828	-	-	-	-	828	881
Tumbleweed Substation Addition		1,000	11,348	4,176	-	-	16,524	16,984
Turtle Creek Substation Upgrade		500	3,768	-	-	-	4,268	5,268
Twelvemile Substation Addition		1,000	8,142	-	-	-	9,142	8,857

# Transmission Projects (Continued)

## LCRA Transmission Services Corporation FY 2020 Capital Plan Approved and Future Projects

(Dollars in thousands)

Project Name	Contingency	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Five-Year Total	Lifetime
<b>Approved (continued)</b>								
Twin Buttes Circuit Breaker Addition		2,955	-	-	-	-	2,955	3,564
Weimar Circuit Breaker Addition		2,290	9	-	-	-	2,299	3,499
Welcome Circuit Breaker Addition		2,970	12	-	-	-	2,982	4,633
Winchester Autotransformer Additions		25,342	7	-	-	-	25,349	32,721
Wirtz Substation Upgrade		1,089	-	-	-	-	1,089	1,089
Zorn-Marion Transmission Line Addition		96	-	-	-	-	96	83,346
<b>Approved Subtotal</b>		<b>299,698</b>	<b>178,434</b>	<b>87,289</b>	<b>47,114</b>	<b>-</b>	<b>612,535</b>	<b>1,059,130</b>
<b>Future</b>								
Altair-Garwood Transmission Line Overhaul		-	-	495	495	-	990	990
Bastrop Power Transformer Addition		-	-	-	1,800	-	1,800	1,800
Bay City Transport Telecommunications Upgrade		-	1,162	1,162	-	-	2,324	2,324
Bernardo Circuit Breaker Addition		-	-	-	500	2,500	3,000	3,000
Big Hat Substation Addition		-	10,000	-	-	-	10,000	10,000
Blewett Circuit Breaker Addition		-	-	1,000	2,000	-	3,000	3,000
Brenham North Power Transformer Addition		-	-	2,500	-	-	2,500	2,500
Brenham South Power Transformer Addition		-	-	-	2,500	-	2,500	2,500
Caldwell County Substation Addition		-	-	1,000	2,000	12,000	15,000	15,000
Cedar Hill Power Transformer Upgrade		-	-	-	1,000	1,000	2,000	2,000
Central Texas Electric Cooperative Transmission Line Improvements		-	-	5,000	5,000	5,000	15,000	15,000
Cienega Substation Upgrade		-	300	-	-	-	300	300
Colorado County Area Transmission Line Upgrades		-	2,197	8,786	10,983	-	21,966	21,966
Condor Conductor Remediation – FY 2021 Transmission Line Upgrade		-	3,000	6,000	-	-	9,000	9,000
Condor Conductor Remediation – FY 2022 Transmission Line Upgrade		-	-	3,000	6,000	-	9,000	9,000
Condor Conductor Remediation – FY 2023 Transmission Line Upgrade		-	-	-	3,000	6,000	9,000	9,000
Condor Conductor Remediation – FY 2024 Transmission Line Upgrade		-	-	-	-	3,000	3,000	9,000
Crane East Circuit Breaker Addition		-	-	-	1,000	2,000	3,000	3,000

# Transmission Projects (Continued)

## LCRA Transmission Services Corporation FY 2020 Capital Plan Future Projects

(Dollars in thousands)

Project Name	Contingency	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Five-Year Total	Lifetime
<b>Future (continued)</b>								
Deer Creek-Luling Transmission Line Upgrade	-	-	-	750	6,638	-	7,388	7,388
Easement Enhancement – FY 2021 System Upgrade	-	-	2,000	-	-	-	2,000	2,000
Easement Enhancement – FY 2022 System Upgrade	-	-	-	2,000	-	-	2,000	2,000
Easement Enhancement – FY 2023 System Upgrade	-	-	-	-	2,000	-	2,000	2,000
Easement Enhancement – FY 2024 System Upgrade	-	-	-	-	-	2,000	2,000	2,000
Easton Park Substation Addition	-	-	-	-	500	-	500	500
Eckert-Nebo Transmission Line Overhaul	-	-	600	-	-	-	600	600
Elgin Tap Circuit Breaker Addition	-	-	-	-	1,000	2,000	3,000	3,000
Energy Management System Upgrade – Phase 5 System Upgrade	-	-	-	1,000	-	-	1,000	1,000
Escobares Substation Addition	-	-	-	1,000	2,000	-	3,000	3,000
Fayetteville Autotransformer Replacement	-	-	-	-	1,000	4,500	5,500	5,500
Four Point Substation Addition	-	-	-	200	-	-	200	200
Gabriel-Gabriel Split Transmission Line Upgrade	-	-	750	4,715	-	-	5,465	5,465
General Additions	-	-	4,000	4,000	4,000	4,000	16,000	16,000
Generation Interconnection Additions – FY 2021	-	-	5,000	11,000	-	-	16,000	16,000
Generation Interconnection Additions – FY 2022	-	-	-	5,000	11,000	-	16,000	16,000
Generation Interconnection Additions – FY 2023	-	-	-	-	5,000	11,000	16,000	16,000
Generation Interconnection Additions – FY 2024	-	-	-	-	-	5,000	5,000	16,000
Giddings Power Transformer Addition	-	-	-	-	900	900	1,800	1,800
Gillespie-Sandstone Mountain Transmission Line Overhaul	-	-	1,000	2,431	-	-	3,431	3,431
Glasscock Substation Upgrade	-	-	-	-	1,000	-	1,000	1,000
Gonzales-Hochheim Tap Transmission Line Overhaul	-	-	1,284	13,119	-	-	14,403	14,403
Hallettsville-Hallettsville City Transmission Line Addition	-	-	-	-	-	5,355	5,355	5,355
Harris Branch Power Transformer Addition	-	-	-	-	1,800	-	1,800	1,800
High Point Substation Addition	-	-	1,000	3,000	-	-	4,000	4,000
Highway 36 Power Transformer Addition	-	-	-	-	900	900	1,800	1,800

# Transmission Projects (Continued)

## LCRA Transmission Services Corporation FY 2020 Capital Plan Future Projects

(Dollars in thousands)

Project Name	Contingency	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Five-Year Total	Lifetime
<b>Future (continued)</b>								
Hortontown Substation Upgrade	-	1,000	4,000	-	-	5,000	5,000	5,000
Hueco Springs Substation Addition	-	-	2,500	2,500	-	5,000	5,000	5,000
Jack Furman Power Transformer Addition	-	750	750	-	-	1,500	1,500	1,500
Kendall County Transmission Line Addition	-	-	1,000	1,000	1,000	3,000	70,000	70,000
LCRA TSC Fiber Build-out – FY 2021 Telecommunications Upgrade	-	3,000	5,000	-	-	8,000	8,000	8,000
LCRA TSC Fiber Build-out – FY 2022 Telecommunications Upgrade	-	-	5,000	5,000	-	10,000	10,000	10,000
LCRA TSC Fiber Build-out – FY 2023 Telecommunications Upgrade	-	-	-	5,000	5,000	10,000	10,000	10,000
LCRA TSC Transmission System Upgrade	-	-	-	-	10,000	10,000	10,000	10,000
Lockhart-Mendoza Transmission Line Storm Hardening	-	536	3,284	-	-	3,820	3,820	3,820
Lockhart-Red Rock Transmission Line Overhaul	-	579	5,842	-	-	6,421	6,421	6,421
Maenius Road Circuit Breaker Addition	-	-	-	500	2,500	3,000	3,000	3,000
Marion Autotransformer Replacement	-	500	4,500	-	-	5,000	5,000	5,000
Merrelltown Substation Addition	-	-	-	2,831	-	2,831	2,831	2,831
Minor Capital	-	5,936	4,182	4,040	394	14,552	14,552	14,552
Montgomery County Transmission Line Addition	-	1,000	1,000	2,000	20,000	24,000	24,000	24,000
Northwest Austin Metro Transmission Line Addition	-	-	-	-	1,000	1,000	40,000	40,000
Obsolete Circuit Breaker Replacement – FY 2021 Substation Upgrade	-	500	2,000	-	-	2,500	2,500	2,500
Obsolete Circuit Breaker Replacement – FY 2022 Substation Upgrade	-	-	500	2,000	-	2,500	2,500	2,500
Obsolete Circuit Breaker Replacement – FY 2023 Substation Upgrade	-	-	-	500	2,000	2,500	2,500	2,500
Obsolete Circuit Breaker Replacement – FY 2024 Substation Upgrade	-	-	-	-	500	500	2,500	2,500
Oxy Tap Circuit Breaker Addition	-	-	-	1,000	2,000	3,000	3,000	3,000
Physical Security – FY 2021 Substation Upgrade	-	3,500	6,500	-	-	10,000	10,000	10,000
Physical Security – FY 2022 Substation Upgrade	-	-	3,000	3,000	-	6,000	6,000	6,000
Protective Relaying – FY 2021 System Upgrade	-	1,000	1,000	-	-	2,000	2,000	2,000
Protective Relaying – FY 2023 System Upgrade	-	-	-	1,000	1,000	2,000	2,000	2,000
Red Rock-Tahitian Village Transmission Line Overhaul	-	1,000	5,275	-	-	6,275	6,275	6,275

# Transmission Projects (Continued)

## LCRA Transmission Services Corporation FY 2020 Capital Plan Future Projects

(Dollars in thousands)

Project Name	Contingency	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Five-Year Total	Lifetime
<b>Future (continued)</b>								
Remote Terminal Unit MPLS Migration – FY 2021 Telecommunications Upgrade		-	1,800	-	-	-	1,800	1,800
Rio Grande Electric Cooperative Transmission Line Improvements		-	-	1,100	2,200	-	3,300	3,300
Storm Mitigation – FY 2021 Substation Upgrade		-	1,000	-	-	-	1,000	1,000
Storm Mitigation – FY 2022 Substation Upgrade		-	-	1,000	-	-	1,000	1,000
Storm Mitigation – FY 2023 Substation Upgrade		-	-	-	500	-	500	500
Strahan Power Transformer Addition		-	-	-	1,800	-	1,800	1,800
Synchronous Optical Networking Migration Telecommunications Upgrade		-	-	1,000	1,000	1,000	3,000	3,000
System Operations Control Center Data Center		-	2,000	8,000	-	-	10,000	10,000
Telecommunications Tower Additions		-	-	-	-	1,000	1,000	1,000
Transmission Bus Reconfiguration – FY 2021 Substation Upgrade		-	2,000	3,000	-	-	5,000	5,000
Transmission Bus Reconfiguration – FY 2022 Substation Upgrade		-	-	2,500	2,500	-	5,000	5,000
Transmission Bus Reconfiguration – FY 2023 Substation Upgrade		-	-	-	2,500	2,500	5,000	5,000
Transmission Bus Reconfiguration – FY 2024 Substation Upgrade		-	-	-	-	2,500	2,500	5,000
Transmission Line Clearance Mitigation – FY 2021		-	1,000	-	-	-	1,000	1,000
Transmission Line Clearance Mitigation – FY 2022		-	-	1,000	-	-	1,000	1,000
Transmission Line Clearance Mitigation – FY 2023		-	-	-	1,000	-	1,000	1,000
Transmission Line Overhauls – FY 2021		-	2,862	4,862	-	-	7,724	7,724
Transmission Line Overhauls – FY 2022		-	-	5,866	-	-	5,866	5,866
Transmission Line Overhauls – FY 2023		-	-	-	14,135	-	14,135	14,135
Transmission Line Overhauls – FY 2024		-	-	-	-	14,000	14,000	14,000
Transmission Line Storm Hardening – FY 2021		-	1,500	3,500	-	-	5,000	5,000
Transmission Line Storm Hardening – FY 2022		-	-	2,500	2,500	-	5,000	5,000
Transmission Metering – FY 2021 Substation Upgrade		-	505	-	-	-	505	505
Transmission Metering – FY 2022 Substation Upgrade		-	-	505	-	-	505	505
Transmission Metering – FY 2023 Substation Upgrade		-	-	-	505	-	505	505
Transport Network Power – FY 2021 Telecommunications Upgrade		-	400	-	-	-	400	400



# Transmission Projects (Continued)

## LCRA Transmission Services Corporation FY 2020 Capital Plan Future Projects

(Dollars in thousands)

Project Name	Contingency	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Five-Year Total	Lifetime
<b>Future (continued)</b>								
Transport Network Power – FY 2022 Telecommunications Upgrade		-	-	400	-	-	400	400
Turtle Creek-Verde Creek Transmission Line Overhaul		-	-	1,179	1,179	-	2,358	2,358
TXI Loop Transmission Line Addition		-	1,000	2,000	8,000	12,838	23,838	23,838
Weltner Road Circuit Breaker Addition		-	-	-	500	2,500	3,000	3,000
West Texas-San Antonio Transmission Line Addition		-	-	-	-	1,000	1,000	100,000
Whisper Valley Substation Addition		-	400	3,600	-	-	4,000	4,000
Wolf Creek Circuit Breaker Addition		-	-	500	2,500	-	3,000	3,000
XS Ranch Substation Addition		-	-	3,900	-	-	3,900	3,900
Yoakum Gartner Road Power Transformer Upgrade		-	-	-	900	900	1,800	1,800
York Creek Circuit Breaker Addition		-	-	-	500	2,500	3,000	3,000
Yorktown-Nordheim Circuit Breaker Addition		-	-	500	2,500	-	3,000	3,000
<b>Future Subtotal</b>		-	66,061	179,403	149,106	153,287	547,857	774,357
<b>Total LCRA Transmission Services Corporation</b>		341,896	369,067	320,518	196,735	153,287	1,381,503	2,054,768

# Water Projects

Water projects in the capital plan include capital improvements for managing and delivering raw water. This plan focuses resources on managing the river, improving infrastructure – including LCRA’s Hydromet system – and planning to meet the basin’s future water needs.

Water recommended and approved projects total \$36.5 million in FY 2020 and \$65.9 million over the next five years through FY 2024. Future projects total \$65.3 million through FY 2024.

## **FY 2020 Requested Project Budget Increases**

**Garwood River Plant Upstream Bank Erosion (lifetime budget of \$2.6 million)** – The project will repair areas around Garwood River Plant’s river pump station damaged by Hurricane Harvey. Repairs will include installing sheet piling along about 160 feet of riverbank for stabilization and an additional 840 feet of soft armoring around the pump station intakes. The Board approved the project in FY 2019 based on a preliminary assessment of the damages and a lifetime budget of \$500,000. Staff performed a detailed engineering assessment and cost estimate for repairs and requests the lifetime budget be reset to \$2.6 million. Portions of the repair work are eligible for insurance and Federal Emergency Management Agency reimbursements.

**Lakeside River Plant Bank Erosion Hurricane Harvey Recovery (lifetime budget of \$2.9 million)** – The project will repair areas around Lakeside River Plant’s river pump station damaged by Hurricane Harvey. Repairs will include stabilizing about 300 feet of riverbank, including failed sections of existing steel sheet pile, active slope failures and damaged wooden piles adjacent to the pump station building. The Board approved the project in FY 2019 based on a preliminary assessment of the damages and a lifetime budget of \$700,000. Staff performed a detailed engineering assessment and cost estimate for the repairs and requests the lifetime budget be reset to \$2.9 million. Portions of the repair work are eligible for insurance and FEMA reimbursements.

# Water Projects (Continued)

## FY 2020 Requested Project Budget Increases (Continued)

**Griffith League Ranch Groundwater (lifetime budget of \$8.5 million)** – The project will complete the engineering design, permitting and vegetation clearing for the first of three phases of the Griffith League Ranch groundwater well system. Phase 1 work includes the preparation of construction drawings and specifications for two groundwater wells, a pipeline and a 2 million-gallon water storage tank. Ancillary work includes clearing vegetation and installing creek crossings. The Board approved the project in FY 2019 based on an initial understanding of the design requirements and site conditions and a lifetime budget of \$5.5 million. Staff further characterized the design and access requirements and requests the lifetime budget be reset to \$8.5 million.

## FY 2020 Recommended Projects

**General Additions (lifetime budgets total about \$2 million)** – General addition projects will maintain infrastructure and improve reliability and efficiency for the following:

- Hydromet.
- Irrigation systems.
- Raw water.

**Minor Capital (lifetime budgets total \$616,000)** – The scope of minor capital projects is to purchase equipment that, essentially, is ready to place in service upon delivery for the following:

- Hydromet.
- Irrigation systems.
- Raw water.

# Water Projects (Continued)

## Water

### FY 2020 Capital Plan Recommended and Approved Projects

(Dollars in thousands)

Project Name	Contingency	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Five-Year Total	Lifetime
<b>Recommended</b>								
General Additions – Hydromet		150	-	-	-	-	150	150
General Additions – Irrigation Systems		1,420	-	-	-	-	1,420	1,420
General Additions – Raw Water		400	-	-	-	-	400	400
Minor Capital – Hydromet		168	-	-	-	-	168	168
Minor Capital – Irrigation Systems		335	-	-	-	-	335	335
Minor Capital – Raw Water		113	-	-	-	-	113	113
<b>Recommended Subtotal</b>		<b>2,586</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>2,586</b>	<b>2,586</b>
<b>Approved</b>								
Arbuckle Reservoir		950	-	-	-	-	950	250,000
Buchanan Dam 7 Gate Spillway Channel		679	-	-	-	-	679	1,500
Buchanan Dam Floodgate Rehabilitation – Phase 2		2,402	-	-	-	-	2,402	50,072
Buchanan Dam Spalling Concrete Rehabilitation – Phase 3		3,054	2,876	3,214	3,706	2,698	15,548	36,000
Garwood River Plant Upstream Bank Erosion		2,041	-	-	-	-	2,041	2,600
Griffith League Ranch Groundwater		4,775	1,075	800	-	-	6,650	8,500
Gulf Coast Plant No. 1 Bank Erosion		429	-	-	-	-	429	1,354
Gulf Coast Plant No. 1 Downstream Sheet Pile Wall		928	-	-	-	-	928	1,500
Lakeside River Plant Bank Erosion Hurricane Harvey Recovery		2,448	-	-	-	-	2,448	2,900
Lane City Dam Rehabilitation and Hurricane Harvey Recovery		10,500	2,940	-	-	-	13,440	13,760
Mansfield Dam Paradox Gate Rehabilitation – Phase 2		1,300	1,200	1,200	1,100	93	4,893	10,416
New Water Supply Projects – Phase 1		1,850	1,848	-	-	-	3,698	6,179
Prairie Conservation Reservoir		2,535	3,915	2,578	199	-	9,227	11,340
<b>Approved Subtotal</b>		<b>33,891</b>	<b>13,854</b>	<b>7,792</b>	<b>5,005</b>	<b>2,791</b>	<b>63,333</b>	<b>396,121</b>

# Water Projects (Continued)

## Water

### FY 2020 Capital Plan Future Projects

(Dollars in thousands)

Project Name	Contingency	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Five-Year	
							Total	Lifetime
<b>Future</b>								
Buchanan Dam Intake Structure – Phase 2	-	-	-	-	-	800	800	800
Buchanan Dam Seven-Gate Section Deck and Hoist Recoating	-	1,000	-	-	-	-	1,000	1,000
Garwood Automated Gates	-	400	-	-	-	-	400	400
Garwood Dam Rehabilitation	-	500	-	-	-	-	500	500
General Additions – Hydromet	-	100	100	100	100	100	400	400
General Additions – Irrigation Systems	-	700	700	700	600	600	2,600	2,600
General Additions – Raw Water	-	400	200	200	200	200	1,000	1,000
Griffith League Ranch Groundwater – Phase 2	-	-	6,500	6,500	-	-	13,000	13,000
Gulf Coast Plant No. 1 – Pumps 1 and 2	-	-	700	-	-	-	700	700
Lakeside Lake Plant Building Office and Meeting Room	-	-	-	-	-	300	300	300
Lakeside Lake Plant Variable Frequency Drive and Switchgear Building	-	-	-	-	-	500	500	500
Lakeside Main Canal Structures	-	-	-	300	300	600	1,200	1,200
Lakeside Prairie Plant Automated Trash Rack	-	-	300	-	-	300	300	300
Mansfield Dam Floodgate Hydraulic Piping	-	-	-	800	-	800	800	800
Mansfield Dam Parapet Wall End Replacement	-	-	-	-	312	312	312	312
Matagorda Bay Brackish Groundwater Well	-	500	1,000	2,500	1,000	5,000	5,000	5,000
Minor Capital – Hydromet	-	167	167	167	167	668	668	668
Minor Capital – Irrigation Systems	-	350	350	350	350	1,400	1,400	1,400
New Regional Water Supply Projects – Phase 2	-	2,000	11,000	11,000	11,000	35,000	35,000	35,000
<b>Future Subtotal</b>	-	6,117	21,017	22,517	22,517	15,629	65,280	65,880
<b>Total Water</b>		36,477	19,971	28,809	27,522	18,420	131,199	464,587

# Public Services Projects

Legislative authority and LCRA's Board of Directors provide direction for LCRA staff to develop and manage parks, recreation facilities and natural science centers in LCRA's statutory district, providing public recreation and water access along the lower Colorado River and its tributaries and at LCRA's power plant reservoirs. LCRA's park system includes more than 40 parks on nearly 11,000 acres. The parks enhance the public's use and enjoyment of LCRA lands and provide diverse outdoor recreation and education opportunities.

LCRA's public service funding aims to keep pace with the growing Texas population and expected increase in park visitation, protect natural resources and water quality along the Colorado River; and develop facilities that help achieve LCRA's cost-recovery goals for parks. As part of this development, staff seeks approval of PRCLA to fund capital in the first three years of the plan.

Public Services recommended and approved projects total \$4 million in FY 2020 and \$9.1 million over the next five years through FY 2024. Future projects total \$9.9 million through FY 2024.

## **FY 2020 Recommended Projects**

**Lake Bastrop North Shore Facilities (lifetime budget of \$675,000)** – The project will replace a 20-year-old bathroom and shower facility at Lake Bastrop North Shore Park. The facility is centrally located in the park and shows significant signs of disrepair. The replacement will be built on the existing concrete pad and will use existing water and electric connections to minimize permitting and construction costs. The project includes 16% contingency and is marked preliminary as a mitigation against the risk that project assumptions (e.g., the existing slab and utility connections may be reused) are not achievable.



# Public Services Projects (Continued)

## FY 2020 Recommended Projects (Continued)

**Matagorda Bay Nature Park Improvements (lifetime budget of \$6.915 million)** – The project will implement several new revenue-generating amenities at a park that maintains some of the highest visitation rates in LCRA’s park system. Park additions will include 10 new overnight lodging cabins, shade shelters for some RV sites and a miniature golf course. The project also will address building improvements, such as replacing windows and doors, to maintain the investment in existing structures. Staff is recommending that \$3.6 million of the \$6.9 million lifetime budget be funded from the Public Recreation and Conservation Land Acquisition Fund.

**Minor Capital (lifetime budgets total \$344,000)** – The scope of minor capital projects is to purchase equipment that, essentially, is ready to place in service upon delivery for the following:

- Parks.
- Other Public Services.

# Public Services Projects (Continued)

## Public Services

### FY 2020 Capital Plan Recommended, Approved and Future Projects

(Dollars in thousands)

Project Name	Contingency	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Five-Year Total	Lifetime
<b>Recommended</b>								
<b>Parks</b>								
Lake Bastrop North Shore Facilities	16%	675	-	-	-	-	675	675
Matagorda Bay Nature Park Improvements	9%	1,795	3,525	1,595	-	-	6,915	6,915
Minor Capital		178	-	-	-	-	178	178
<b>Other Public Services</b>								
Minor Capital		166	-	-	-	-	166	166
Recommended Subtotal		2,814	3,525	1,595	-	-	7,934	7,934
<b>Approved</b>								
<b>Parks</b>								
Beason's Park Hurricane Harvey Recovery		688	-	-	-	-	688	935
FM 521 River Park Hurricane Harvey Recovery		245	-	-	-	-	245	375
White Rock Park Hurricane Harvey Recovery		273	-	-	-	-	273	415
Approved Subtotal		1,206	-	-	-	-	1,206	1,725
<b>Future</b>								
<b>Parks</b>								
McKinney Roughs Nature Park Lodging		-	-	2,000	4,100	2,500	8,600	8,600
Minor Capital		-	200	164	147	119	630	630
<b>Other Public Services</b>								
Minor Capital		-	162	160	158	160	640	640
Future Subtotal		-	362	2,324	4,405	2,779	9,870	9,870
<b>Total Public Service</b>		4,020	3,887	3,919	4,405	2,779	19,010	19,529

# Strategic Services Projects

Strategic Services recommended projects total \$1.9 million in FY 2020 and over the next five years through FY 2024. Future projects total \$3.1 million through FY 2024.

## FY 2020 Recommended Projects

**General Additions (lifetime budgets total about \$1.4 million)** – General addition projects will maintain infrastructure and make strategic improvements to enhance customer service in the following areas:

- LCRA Environmental Laboratory Services.
- Telecommunications.

**Minor Capital (lifetime budget of \$443,000)** – The scope of minor capital projects is to purchase equipment that, essentially, is ready to place in service upon delivery for the following:

- LCRA Environmental Laboratory Services.

# Strategic Services Projects (Continued)

## Strategic Services

### FY 2020 Capital Plan Recommended and Future Projects

(Dollars in thousands)

Project Name	Contingency	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Five-Year Total	Lifetime
<b>Recommended</b>								
<b>LCRA Environmental Laboratory Services</b>								
General Additions		25	-	-	-	-	25	25
Minor Capital		443	-	-	-	-	443	443
<b>Telecommunications</b>								
General Additions		1,409	-	-	-	-	1,409	1,409
Recommended Subtotal		1,877	-	-	-	-	1,877	1,877
<b>Future</b>								
<b>LCRA Environmental Laboratory Services</b>								
Minor Capital		-	213	167	200	200	780	780
<b>Telecommunications</b>								
General Additions		-	649	1,463	-	200	2,312	2,312
Future Subtotal		-	862	1,630	200	400	3,092	3,092
<b>Total Strategic Services</b>		1,877	862	1,630	200	400	4,969	4,969

# Enterprise Support Projects

Enterprise Support capital projects provide the facility services, telecommunications and information technology infrastructure that support the business operations of the organization. LCRA's power, transmission and water rates fund the projects, which makes predicting costs to include in LCRA's rates especially important. Unless an emergency arises, LCRA adjusts Enterprise Support priorities throughout the year to stay within the approved capital plan budget for each fiscal year instead of seeking additional funding authority from the Board.

Enterprise Support recommended and approved projects total \$20.3 million in FY 2020 and \$29.5 million over the next five years through FY 2024. Future projects total \$72.7 million through FY 2024.

## FY 2020 Recommended Projects

**Edge Network Upgrade (lifetime budget of \$3.5 million)** – The edge network connects access-layer technology such as laptop docking stations and telephones from locations such as substations, parks and power plants to the central Austin data centers. This project will replace aging hardware using newly developed site classifications based on the number of users and site criticality. This is a five-year project.

**Hybrid Infrastructure Management (lifetime budget of \$1.5 million)** – The project will expand the use of software automation tools to reduce manual labor by the Digital Services infrastructure team for tasks such as configuring and troubleshooting hardware components like servers and firewalls. The use of automation software will provide efficiency and accuracy gains for establishing new hardware and for remediating unplanned outages more quickly to restore full business activities. This is a three-year project.

**Inventory Management Enhancements (lifetime budget of \$365,000)** – The project will introduce barcode software to address current manual processes for receiving storeroom materials into the PeopleSoft system as the first step in the inventory management process. The efficiency and accuracy improvements will enable Stores personnel to support LCRA's aggressive project forecast, especially in Transmission construction.

# Enterprise Support Projects (Continued)

## FY 2020 Recommended Projects (Continued)

**Network Architecture Security (lifetime budget of \$3.9 million)** – The project will modernize the LCRA data centers by replacing a firewall-centric architecture with newer methodologies for automation, analytics and security. This is a three-year project.

**Online Payment Portal (lifetime budget of \$510,000)** – The project will implement PeopleSoft eBill, an application designed to modernize LCRA's invoice-based billing practices with digital invoices in a customer portal, customer account self-service and increased options for online payments. This project affects only invoices generated through PeopleSoft, which currently are mailed to customers each month in a paper format.

**Water Billing System (lifetime budget of \$550,000)** – The project will upgrade the current CIS Infinity software used by the Water Contracts and Conservation group for domestic use and firm water billing. In addition to the technical upgrade, this project will introduce a customer portal and an application focused on improving water conservation data analysis and customer communications.

**Wholesale Market Systems Server Refresh (lifetime budget of \$845,000)** – The project will replace end-of-life servers that support a wide variety of Wholesale Power software applications, including Allegro, PCI, Lodestar, and GenDesk servers and software.

**Western Maintenance Facility Natural Resource Conservation Building (lifetime budget of \$315,000)** – The project will construct a new 2,400-square-foot storage building at the Western Maintenance Facility for the Natural Resource Conservation teams. The storage building will increase efficiency by having staff and equipment at a centralized, secure facility.



# Enterprise Support Projects (Continued)

## FY 2020 Recommended Projects (Continued)

**LCRA Fiber Backbone – FY 2020 Telecommunications Upgrade (lifetime budget of \$4.027 million)** – The project will upgrade aged or undersized LCRA-owned optical ground wire on four transmission lines, install new fiber to tie two optical ground wire segments together to improve interoperability, and install a telecommunications shelter at the intersection of four optical ground wire segments.

**Operational Support System Telecommunications Upgrade (lifetime budget of \$1.398 million)** – The project will implement new software to better manage, maintain, categorize and trace telecommunications circuits and their end-use customers. The software package will increase the efficiency of ongoing work, improve response time during contingencies, and allow for better coordination and planning of telecommunications upgrades.

**San Angelo Area Radio System Additions (lifetime budget of \$778,000)** – The project will install two 900-megahertz P25 communications network sites with trunked radio antenna systems to provide a reliable alternative to intermittent cellular communications for field staff in this area.

**West Backbone DWDM Telecommunications Upgrade (lifetime budget of \$1.663 million)** – The project will install Dense Wave Division Multiplexing equipment at multiple locations generally located centrally and to the west of I-35. This equipment will provide increased capacity for LCRA telecommunications uses such as the GenDesk, physical security-related traffic, Energy Management System and corporate network.

# Enterprise Support Projects (Continued)

## FY 2020 Recommended Projects (Continued)

**General Additions (lifetime budgets total about \$3.3 million)** – General addition projects will maintain infrastructure and regulation compliance and improve reliability for the following:

- Digital Services.
- Facilities.
- Telecommunications.

**Minor Capital (lifetime budgets total about \$2.2 million)** – The scope of minor capital projects is to purchase equipment that, essentially, is ready to place in service upon delivery for the following:

- Digital Services.
- Facilities.
- Public Safety.
- Telecommunications.

# Enterprise Support Projects (Continued)

## Enterprise Support FY 2020 Capital Plan Recommended Projects

(Dollars in thousands)

Project Name	Contingency	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Five-Year Total	Lifetime
<b>Recommended</b>								
<b>Digital Services</b>								
Edge Network Upgrade	7%	700	700	700	700	700	3,500	3,500
General Additions		1,100	-	-	-	-	1,100	1,100
Hybrid Infrastructure Management	10%	500	500	500	-	-	1,500	1,500
Inventory Management Enhancements	9%	365	-	-	-	-	365	365
Minor Capital		875	-	-	-	-	875	875
Network Architecture Security	8%	800	1,400	1,700	-	-	3,900	3,900
Online Payment Portal	9%	510	-	-	-	-	510	510
Water Billing System	10%	550	-	-	-	-	550	550
Wholesale Market Systems Server Refresh	10%	845	-	-	-	-	845	845
<b>Facilities</b>								
General Additions		780	-	-	-	-	780	780
Minor Capital		570	-	-	-	-	570	570
Western Maintenance Facility Natural Resource Conservation Building	9%	315	-	-	-	-	315	315
<b>Public Safety</b>								
Minor Capital		322	-	-	-	-	322	322
<b>Telecommunications</b>								
General Additions		1,384	-	-	-	-	1,384	1,384
LCRA Fiber Backbone - FY 2020 Telecommunications Upgrade	0%	2,749	1,278	-	-	-	4,027	4,027
Minor Capital		469	-	-	-	-	469	469
Operational Support System Telecommunications Upgrade	0%	900	498	-	-	-	1,398	1,398
San Angelo Area Radio System Additions	0%	778	-	-	-	-	778	778
West Backbone DWDM Telecommunications Upgrade	0%	1,663	-	-	-	-	1,663	1,663
Recommended Subtotal		16,175	4,376	2,900	700	700	24,851	24,851

# Enterprise Support Projects (Continued)

## Enterprise Support FY 2020 Capital Plan Approved and Future Projects

(Dollars in thousands)

Project Name	Contingency	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Five-Year Total	Lifetime
<b>Approved</b>								
<b>Digital Services</b>								
Campus Distribution Switches		-	500	-	-	-	500	800
Enterprise Compliance – Phase 1		1,300	-	-	-	-	1,300	1,485
Scheduling Tool		595	-	-	-	-	595	300
<b>Telecommunications</b>								
LCRA Backbone Fiber Upgrades – FY 2019		5	-	-	-	-	5	392
Llano Fiber Addition		745	-	-	-	-	745	745
Radio System Migration – FY 2019 Telecommunications Upgrade		1,488	-	-	-	-	1,488	1,833
Approved Subtotal		4,133	500	-	-	-	4,633	5,555
<b>Future</b>								
<b>Digital Services</b>								
Asset and Work Management		-	-	-	-	1,000	1,000	1,000
Budget Tool		-	-	-	1,500	-	1,500	1,500
Database High Availability		-	-	650	-	-	650	650
Digital Services Infrastructure		-	-	-	-	3,000	3,000	10,000
Document Management		-	500	-	-	-	500	500
Enterprise Resource Planning System		-	-	-	-	2,000	2,000	2,000
General Additions		-	1,290	5,400	3,750	1,000	11,440	11,440
Generation Management System		-	-	-	1,200	-	1,200	1,200
Minor Capital		-	1,325	850	850	850	3,875	3,875
Mobile Work Management		-	-	500	-	-	500	500
PeopleSoft Human Resources Enhancements		-	500	-	-	-	500	500
Project Life Cycle Solution – Phase 1		-	-	500	-	-	500	500
Security Information and Event Management		-	1,500	-	-	-	1,500	1,500
Virtual Private Network		-	-	-	-	500	500	500

# Enterprise Support Projects (Continued)

## Enterprise Support FY 2020 Capital Plan Future Projects

(Dollars in thousands)

Project Name	Contingency	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Five-Year Total	Lifetime	
<b>Future (continued)</b>									
Wholesale Markets Data Lake		-	-	1,000	-	-	1,000	1,000	
Wholesale Power Billing System		-	-	-	1,000	1,000	2,000	2,000	
<b>Facilities</b>									
General Additions		-	730	500	500	500	2,230	2,230	
General Office Complex Hancock Building Chiller Plant Magnetic Drive		-	-	-	1,000	-	1,000	1,000	
General Office Complex Redbud Center Chiller		-	-	-	300	-	300	300	
Minor Capital		-	1,509	1,346	1,127	1,000	4,982	4,982	
Tom Miller Dam Powerhouse Wall Spalling		-	300	-	-	-	300	300	
<b>Public Safety</b>									
Minor Capital		-	360	340	302	309	1,311	1,311	
Physical Access Control System – Phase 5		-	-	-	-	500	500	500	
<b>Telecommunications</b>									
East Backbone DWDM Telecommunications Upgrade		-	2,029	-	-	-	2,029	2,029	
Far West Radio Telecommunication Upgrades		-	800	800	800	-	2,400	2,400	
Fayette Power Project Network Reliability Upgrade		-	-	300	-	-	300	300	
General Additions		-	1,429	1,166	1,190	1,000	4,785	4,785	
General Office Complex Campus Fiber Telecommunications Upgrade		-	300	-	-	-	300	300	
Generation Gas Monitoring		-	300	-	-	-	300	300	
LCRA Backbone Fiber Upgrades – FY 2021		-	4,000	-	-	-	4,000	4,000	
LCRA Backbone Fiber Upgrades – FY 2022		-	-	4,000	-	-	4,000	4,000	
LCRA Backbone Fiber Upgrades – FY 2023		-	-	-	4,000	-	4,000	4,000	
LCRA Backbone Fiber Upgrades – FY 2024		-	-	-	-	4,000	4,000	4,000	
Minor Capital		-	629	264	400	57	1,350	1,350	
Radio System Migration – FY 2021 Telecommunications Upgrade		-	1,200	1,000	-	-	2,200	2,200	
Radio System Power – FY 2022 Telecommunications Upgrade		-	-	450	-	-	450	450	
Sim Gideon Power Plant Network Reliability Upgrade		-	300	-	-	-	300	300	
Future Subtotal		-	19,001	19,066	17,919	16,716	72,702	79,702	
<b>Total Enterprise Support</b>			20,308	23,877	21,966	18,619	17,416	102,186	110,108

# Appendix – Financial Tables



# LCRA Consolidated (Including Nonprofit Corporations)

(Dollars in millions)	Budgeted	Proposed	Forecast			
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
<b>Revenues</b>						
<b>Total Net Revenue<sup>1</sup></b>	\$ 948.8	1,026.0	1,053.8	1,092.9	1,228.2	1,232.8
<b>Expenses</b>						
<b>Total Net Expense<sup>1</sup></b>	522.7	574.5	601.6	619.0	649.7	653.8
<b>Net Operating Margin</b>	426.1	451.4	452.1	473.9	578.5	579.0
Less: GenTex 1 Funds <sup>2</sup>	(2.3)	(7.3)	(1.2)	(0.1)	(2.3)	(0.4)
<b>Net Margin for Debt Service, Adjusted</b>	423.9	444.1	450.9	473.8	576.3	578.6
<b>Debt Service</b>	\$ 308.5	319.2	308.2	326.8	375.0	378.5
<b>Debt Service Coverage, Adjusted</b>	1.37x	1.39x	1.46x	1.45x	1.54x	1.53x
<b>Net Margin After Debt Service<sup>3</sup></b>	\$ 117.7	132.3	143.9	147.1	203.5	200.5
Less:						
Operating Reserves	13.8	10.2	12.8	13.9	18.9	9.9
Revenue-Funded Capital	82.6	101.7	120.7	121.8	167.8	171.3
Noncash Revenue	2.6	2.6	2.6	2.6	2.6	2.6
Restricted for Reserves	12.7	12.7	5.0	5.9	11.9	12.2
Restricted for Capital/Debt Retirement	5.0	3.5	1.1	1.3	0.7	2.9
Grants	1.0	1.6	1.6	1.6	1.6	1.6
<b>Net Cash Flow</b>	\$ 0.0	0.0	0.0	0.0	0.0	0.0

<sup>1</sup> Total net revenues and total net expenses are net of intracompany transfers. Total revenues include interest income. Operations and maintenance expense excludes the LCRA TSC capital charge, which is a capital expense for LCRA consolidated.

<sup>2</sup> Includes adjustments related to GenTex 1 capital funding and reserve funding.

<sup>3</sup> Net margin after debt service includes funds dedicated to GenTex 1.

# Wholesale Power (Including Nonprofit Corporations)

Confidential competitive electric information has been removed from this version of the document.

# LCRA TSC

(Dollars in millions)

	Budgeted	Proposed	Forecast			
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Revenues	\$ 425.8	457.5	487.7	518.1	628.9	641.7
Operations and Maintenance	110.9	117.9	124.4	129.2	128.0	131.6
<b>Net Operating Margin</b>	<b>314.9</b>	<b>339.5</b>	<b>363.3</b>	<b>388.9</b>	<b>500.9</b>	<b>510.0</b>
Plus: Interest Income	3.8	5.6	6.6	6.8	6.9	5.6
Less: Assigned Enterprise Expense	48.1	51.0	49.7	54.5	61.3	63.9
Public Service Fund	12.8	13.7	14.6	15.5	18.9	19.2
Resource Development Fund	8.5	9.1	9.8	10.4	12.6	12.8
<b>Net Margin Available for Debt Service</b>	<b>249.3</b>	<b>271.3</b>	<b>295.8</b>	<b>315.3</b>	<b>415.2</b>	<b>419.7</b>
<b>Debt Service</b>	<b>\$ 180.4</b>	<b>199.1</b>	<b>211.5</b>	<b>229.9</b>	<b>277.7</b>	<b>279.2</b>
<b>Debt Service Coverage</b>	<b>1.38x</b>	<b>1.36x</b>	<b>1.40x</b>	<b>1.37x</b>	<b>1.50x</b>	<b>1.50x</b>
<b>Net Margin After Debt Service</b>	<b>\$ 68.9</b>	<b>72.2</b>	<b>84.3</b>	<b>85.3</b>	<b>137.5</b>	<b>140.4</b>
Less:						
Operating Reserves	4.6	5.7	3.9	6.2	7.2	6.0
Assigned Enterprise Capital	8.4	12.2	16.3	13.9	11.4	11.2
Revenue-Funded Capital	54.0	52.4	69.5	71.2	125.3	130.4
Transfer to LCRA <sup>1</sup>	7.3	6.7	1.1	1.1	1.1	1.1
Plus:						
Amortization of Enterprise/Minor Capital <sup>2</sup>	5.4	4.9	6.5	7.1	7.6	8.4
<b>Net Cash Flow</b>	<b>\$ 0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

<sup>1</sup> An initial transfer from LCRA TSC to LCRA was authorized by the LCRA and LCRA TSC boards of directors in April 2014. Under the initial contractual commitment, the LCRA and LCRA TSC boards must make an annual determination to authorize each year's transfer. Such annual transfers are payable only if all other financial commitments have been met as required by LCRA TSC's financial policies.

<sup>2</sup> In FY 2012 through FY 2018, LCRA TSC funded minor capital and its share of enterprise capital with current year revenues and included an amortization of the amount in each year to recover in rates. Starting in FY 2019, minor capital is included in LCRA TSC's capital plan.

# Water

(Dollars in millions)	Budgeted	Proposed	Forecast			
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
<b>Revenues</b>						
Firm Water	\$ 20.0	23.1	25.8	27.0	27.2	27.5
Agriculture	11.0	10.5	11.6	12.1	12.6	13.1
Other	2.1	2.1	2.0	2.0	2.0	2.0
<b>Total Revenues</b>	<b>33.1</b>	<b>35.7</b>	<b>39.4</b>	<b>41.1</b>	<b>41.8</b>	<b>42.6</b>
Operations and Maintenance	18.1	18.0	16.4	17.0	17.1	17.1
<b>Net Operating Margin</b>	<b>15.0</b>	<b>17.6</b>	<b>23.0</b>	<b>24.2</b>	<b>24.8</b>	<b>25.4</b>
Plus: Interest Income	1.1	1.4	1.7	1.5	1.5	1.5
Less: Assigned Enterprise Expense	4.2	5.5	6.1	6.0	6.1	6.6
Public Service Fund	1.0	1.1	1.2	1.2	1.3	1.3
Resource Development Fund	0.0	0.5	0.6	0.6	0.6	0.6
<b>Net Margin Available for Debt Service</b>	<b>10.9</b>	<b>12.0</b>	<b>16.8</b>	<b>17.9</b>	<b>18.4</b>	<b>18.6</b>
<b>Debt Service</b>	<b>\$ 16.0</b>	<b>15.8</b>	<b>18.5</b>	<b>18.8</b>	<b>19.5</b>	<b>20.8</b>
<b>Debt Service Coverage</b>	<b>0.68x</b>	<b>0.76x</b>	<b>0.91x</b>	<b>0.95x</b>	<b>0.94x</b>	<b>0.89x</b>
Plus: Resource Development Funding	\$ 10.3	10.6	12.9	13.0	12.9	13.0
<b>Debt Service Coverage, Adjusted</b>	<b>1.32x</b>	<b>1.44x</b>	<b>1.61x</b>	<b>1.64x</b>	<b>1.60x</b>	<b>1.52x</b>
<b>Net Margin After Debt Service</b>	<b>5.2</b>	<b>6.9</b>	<b>11.3</b>	<b>12.1</b>	<b>11.7</b>	<b>10.7</b>
Less:						
Operating Reserves	0.4	0.3	0.0	0.1	0.0	0.1
Assigned Enterprise Capital	0.6	1.4	1.1	1.1	0.9	0.9
Revenue-Funded Capital	2.2	3.2	8.3	9.0	9.0	7.8
Noncash Revenues	1.9	1.9	1.9	1.9	1.9	1.9
<b>Net Cash Flow</b>	<b>\$ 0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>

# Strategic Services

(Dollars in millions)	Budgeted	Proposed	Forecast			
	FY 2019	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
Revenues	\$ 14.4	19.6	19.3	19.5	19.6	19.9
Expenses	9.4	13.7	13.4	13.6	13.6	13.6
<b>Net Operating Margin</b>	5.0	5.9	5.8	5.9	6.0	6.2
Less: Assigned Enterprise Expense	2.3	3.2	3.2	3.3	3.4	3.4
Public Service Fund	0.4	0.5	0.5	0.5	0.5	0.5
Resource Development Fund	0.1	0.3	0.3	0.3	0.3	0.3
<b>Net Margin Available</b>	\$ 2.2	1.9	1.8	1.7	1.8	2.0
<b>Debt Service</b>	\$ 0.0	0.0	0.1	0.1	0.1	0.1
Less:						
Operating Reserves	0.0	0.0	0.0	0.1	0.0	0.0
Revenue Funded Capital	0.0	0.5	0.2	0.2	0.2	0.4
Assigned Enterprise Capital	0.4	0.6	0.8	0.7	0.6	0.5
Noncash Revenues	0.7	0.7	0.7	0.7	0.7	0.7
<b>Net Cash Flow</b>	\$ 1.1	0.0	0.0	0.0	0.2	0.3



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