Denton Municipal Electric

FY 2018-19 Budget Presentation

Objectives

- Load Forecast
- Financial Assumptions
- Commercial/Residential Comparison
- Energy Cost Adjustment (ECA)
- Financial Forecast
- Debt
- Purchased Power
- Denton Energy Center (DEC) Proforma
- Departmental Presentation, Including Capital Improvement Program (CIP)

Load Forecast Customers by Class

Fiscal Year	Residential		Commercial		Industrial		Other		Total	
2010	39,819	-0.2%	4,734	1.8%	121	1.7%	499	3.5%	45,173	0.0%
2011	40,846	2.6%	4,846	2.4%	124	2.5%	426	-14.6%	46,242	2.4%
2012	42,054	3.0%	4,947	2.1%	124	0.0%	438	2.8%	47,563	2.9%
2013	43,572	3.6%	5,126	3.6%	127	2.4%	439	0.2%	49,264	3.6%
2014	44,241	1.5%	5,255	2.5%	127	0.0%	498	13.4%	50,121	1.7%
2015	44,203	-0.1%	5,130	-2.4%	124	-2.4%	602	20.9%	50,059	-0.1%
2016	45,163	2.2%	5,216	1.7%	135	8.9%	572	-5.0%	51,086	2.1%
2017	45,922	1.7%	5,294	1.5%	139	3.0%	560	-2.1%	51,915	1.6%
2018	46,864	2.1%	5,439	2.7%	141	1.4%	550	-1.8%	52,994	2.1%
2019	47,599	1.6%	5,496	1.0%	145	3.0%	572	4.0%	53,812	1.5%
2020	48,403	1.7%	5,575	1.4%	150	3.0%	578	1.2%	54,707	1.7%
2021	49,256	1.8%	5,665	1.6%	154	3.1%	581	0.5%	55,656	1.7%
2022	50,111	1.7%	5,756	1.6%	159	2.8%	586	0.9%	56,612	1.7%
2023	50,979	1.7%	5,847	1.6%	163	2.9%	592	1.1%	57,581	1.7%
2024	51,857	1.7%	5,936	1.5%	168	2.9%	599	1.1%	58,560	1.7%
2025	52,755	1.7%	6,029	1.6%	173	2.9%	605	1.0%	59,561	1.7%

Load Forecast MWh Sales and MW Peak

Fiscal Year	Residential		Commercial		Industrial		Other		Total		Peak MW	
2010	541,324	9.0%	256,435	1.8%	525,479	3.3%	35,167	5.5%	1,358,405	5.2%	339	6.9%
2011	569,711	5.2%	269,986	5.3%	544,448	3.6%	32,133	-8.6%	1,416,278	4.3%	350	3.2%
2012	537,631	-5.6%	263,474	-2.4%	535,160	-1.7%	33,418	4.0%	1,369,683	-3.3%	341	-2.6%
2013	541,109	0.6%	268,237	1.8%	535,984	0.2%	34,078	2.0%	1,379,407	0.7%	342	0.3%
2014	565,587	4.5%	279,720	4.3%	542,806	1.3%	32,945	-3.3%	1,421,058	3.0%	336	-1.8%
2015	576,810	2.0%	287,468	2.8%	565,632	4.2%	31,496	-4.4%	1,461,406	2.8%	347	3.3%
2016	552,695	-4.2%	289,030	0.5%	570,668	0.9%	20,924	-33.6%	1,433,317	-1.9%	349	0.6%
2017	555,350	0.5%	295,856	2.4%	582,670	2.1%	15,708	-24.9%	1,449,585	1.1%	337	-3.4%
2018	590,207	6.3%	294,144	-0.6%	578,769	-0.7%	15,428	-1.8%	1,478,548	2.0%	360	6.8%
2019	590,729	0.1%	300,549	2.2%	590,110	2.0%	14,856	-3.7%	1,496,243	0.9%	361	0.3%
2020	598,846	1.4%	304,459	1.3%	597,748	1.3%	14,930	0.5%	1,515,983	1.0%	370	2.5%
2021	607,962	1.5%	308,264	1.2%	604,681	1.2%	15,005	0.5%	1,535,911	1.0%	386	4.3%
2022	618,665	1.8%	312,207	1.3%	611,783	1.2%	15,080	0.5%	1,557,735	1.1%	403	4.4%
2023	629,168	1.7%	316,177	1.3%	618,980	1.2%	15,155	0.5%	1,579,481	1.1%	420	4.2%
2024	638,788	1.5%	320,394	1.3%	626,658	1.2%	15,231	0.5%	1,601,071	1.0%	438	4.3%
2025	649,066	1.6%	324,536	1.3%	634,197	1.2%	15,307	0.5%	1,623,107	1.1%	457	4.3%

Financial Assumptions

- Pay off $28.6 Million of 2010 TMPA Related Callable Scrubber Debt – February 2019
- No Base Rate Change
- TCRF suspended – Re-evaluated annually
- ECA maintained at 0.0341 per kWh in FY 2018-19
- Update ECA Ordinance to Reflect DEC Costs
- Reduced Purchased Power Cost
- Reduce Capital Improvement Program (CIP)
- Debt Fund a portion of Transmission CIP and Cash Fund remaining CIP

Denton Municipal Electric
Cost Containment Strategies

How is DME able to accomplish FY18-19 recommendations:

Reduced Purchased Power Costs ($37 Million) – Below are major changes:

- DEC Net Revenue ($20 Million)
- Reduced TMPA Expenses (-$22 Million)

Reduced CIP

- For FY 18-19, from $45 Million (projected) to $23 Million

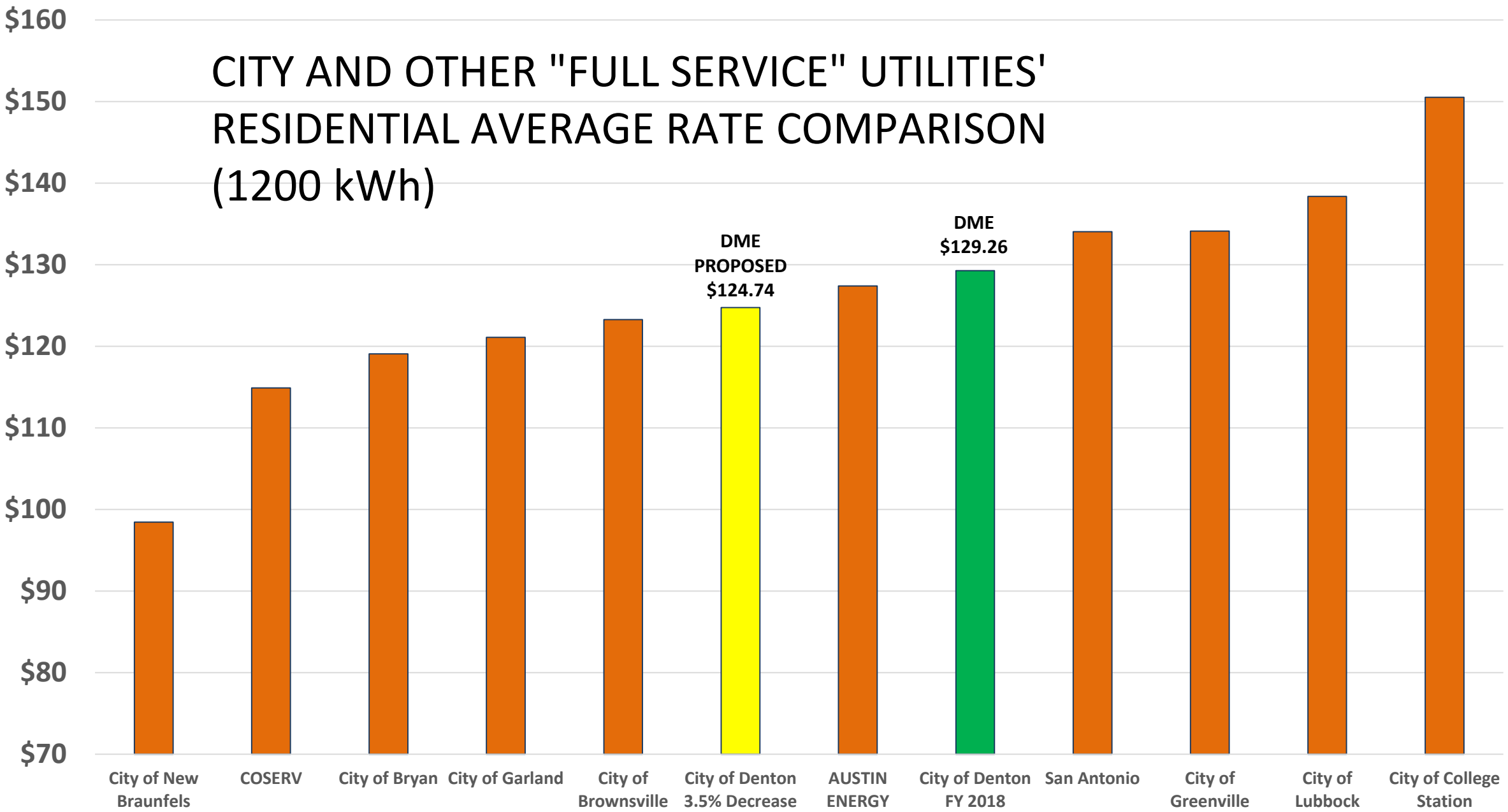
FY 17-18

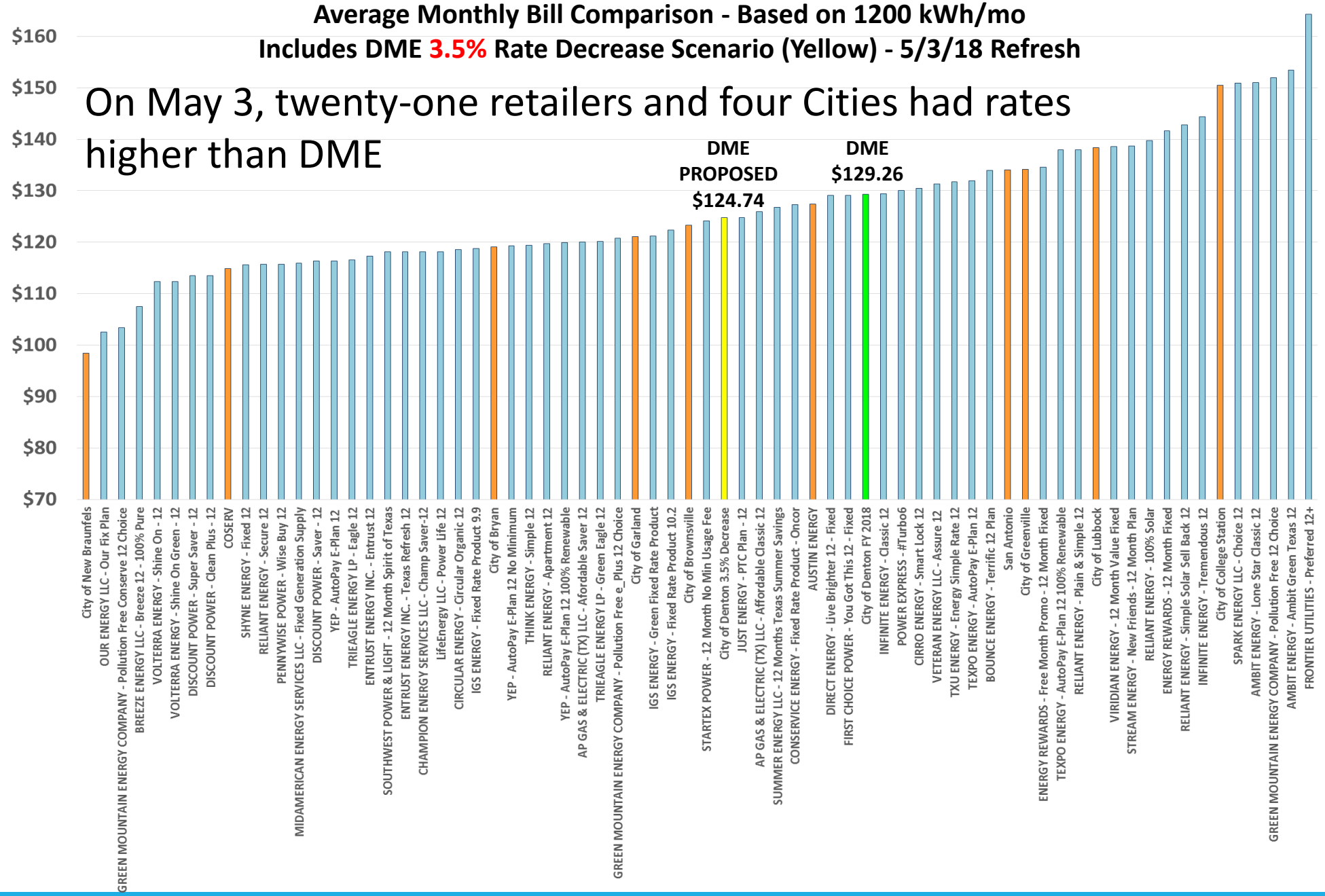
- Cash Funding $24 Million of CIP (Budget Amendment)
- Using approximately $10 Million of unspent Revenue Bonds to fund FY 17-18 CIP

Future Emphasis

- Management of Transmission & Distribution system expansion program
- Operation and maintenance of Denton Energy Center
- Update of Energy Risk Management Policy (Phase II)
- Bid and acquire modern Energy Trading and Risk Management System (ETRM)
- Acquisition of new renewable energy projects to meet 100% renewable goal
  - Participation in solar RFP process with five municipal electric utilities
  - Issuance of Denton RFP for additional solar and/or coastal wind
- Continued focus on making electric distribution system reliability enhancements and circuit "sweeps" by DME distribution crews
- Manage overall power supply portfolio under constrained ERCOT electricity market conditions

CITY AND OTHER "FULL SERVICE" UTILITIES' RESIDENTIAL AVERAGE RATE COMPARISON (1200 kWh)




Average Monthly Bill Comparison - Based on 1200 kWh/mo
Includes DME 3.5% Rate Decrease Scenario (Yellow) - 5/3/18 Refresh
On May 3, twenty-one retailers and four Cities had rates higher than DME
DME PROPOSED $124.74
DME $129.26
$160
$150
$140
$130
$120
$110
$100
$90
$80
$70
City of New Braunfels
OUR ENERGY LLC - Our Fix Plan
GREEN MOUNTAIN ENERGY COMPANY - Pollution Free Conserve 12 Choice
BREEZE ENERGY LLC - Breeze 12 - 100% Pure
VOLTERRA ENERGY - Shine On - 12
VOLTERRA ENERGY - Shine On Green - 12
DISCOUNT POWER - Super Saver - 12
DISCOUNT POWER - Clean Plus - 12
COSERV
SHYNE ENERGY - Fixed 12
RELIANT ENERGY - Secure 12
PENNYWISE POWER - Wise Buy 12
MIDAMERICAN ENERGY SERVICES LLC - Fixed Generation Supply
DISCOUNT POWER - Saver - 12
YEP - AutoPay E-Plan 12
TRIEAGLE ENERGY LP - Eagle 12
ENTRUST ENERGY INC. - Entrust 12
SOUTHWEST POWER & LIGHT - 12 Month Spirit of Texas
ENTRUST ENERGY INC. - Texas Refresh 12
CHAMPION ENERGY SERVICES LLC - Champ Saver-12
LifeEnergy LLC - Power Life 12
CIRCULAR ENERGY - Circular Organic 12
IGS ENERGY - Fixed Rate Product 9.9
City of Bryan
YEP - AutoPay E-Plan 12 No Minimum
THINK ENERGY - Simple 12
RELIANT ENERGY - Apartment 12
YEP - AutoPay E-Plan 12 100% Renewable
AP GAS & ELECTRIC (TX) LLC - Afordable Saver 12
TRIEAGLE ENERGY LP - Green Eagle 12
GREEN MOUNTAIN ENERGY COMPANY - Pollution Free e_Plus 12 Choice
City of Garland
IGS ENERGY - Green Fixed Rate Product
IGS ENERGY - Fixed Rate Product 10.2
City of Brownsville
STARTEX POWER - 12 Month No Min Usage Fee
City of Denton 3.5% Decrease
JUST ENERGY - PTC Plan - 12
AP GAS & ELECTRIC (TX) LLC - Affordable Classic 12
SUMMER ENERGY LLC - 12 Months Texas Summer Savings
CONSERVICE ENERGY - Fixed Rate Product - Oncor
AUSTIN ENERGY
DIRECT ENERGY - Live Brighter 12 - Fixed
FIRST CHOICE POWER - You Got This 12 - Fixed
City of Denton FY 2018
INFINITE ENERGY - Classic 12
POWER EXPRESS - #Turbo6
CIRRO ENERGY - Smart Lock 12
VETERAN ENERGY LLC - Assure 12
TXU ENERGY - Energy Simple Rate 12
TEXPO ENERGY - AutoPay E-Plan 12
BOUNCE ENERGY - Terrific 12 Plan
San Antonio
City of Greenville
ENERGY REWARDS - Free Month Promo - 12 Month Fixed
TEXPO ENERGY - AutoPay E-Plan 12 100% Renewable
RELIANT ENERGY - Plain & Simple 12
City of Lubbock
VIRIDIAN ENERGY - 12 Month Value Fixed
STREAM ENERGY - New Friends - 12 Month Plan
RELIANT ENERGY - 100% Solar
ENERGY REWARDS - 12 Month Fixed
RELIANT ENERGY - Simple Solar Sell Back 12
INFINITE ENERGY - Tremendous 12
City of College Station
SPARK ENERGY LLC - Choice 12
AMBIT ENERGY - Lone Star Classic 12
GREEN MOUNTAIN ENERGY COMPANY - Pollution Free 12 Choice
AMBIT ENERGY - Ambit Green Texas 12
FRONTIER UTILITIES - Preferred 12+

Commercial/Residential Comparison

- An outside consultant is in the process of finalizing DME's "Cost of Service" (COS) study for 2018
- Preliminary results show that Residential customers are paying less than their calculated cost-of-service
- Commercial customers, on the other hand, are paying more than their pure share of DME's costs

ECA Change

The current ECA Rate Schedule authorizes the use of the ECA to pay for projected energy costs. It does not specifically address the Denton Energy Center. Therefore, staff proposes to amend the language to authorize the inclusion of DEC debt and operating expenses. Since the DEC will replace a purchased energy cost, it is appropriate to allow the ECA to include these items.

- ECA Balance as of 9/30/17 = $10.3 Million
- ECA Balance as of 3/31/18 = $7.4 Million
- Estimated Balance as of 9/30/18 = $7.8 Million
- The ECA will be updated quarterly with PUB and City Council approval

ECA Change

- Current calculation:

$$\frac{\text{Projected Energy Cost + ECA Balancing Account}}{\text{Projected kWh Sales}}$$

- Proposed calculation:

$$\frac{\text{Net DEC Expenses}^{1} + \text{Projected Energy Cost + ECA Balancing Account}}{\text{Projected kWh Sales}}$$

[1]Revenue less Debt Service and Operation & Maintenance Cost

Denton Municipal Electric
5 Year Forecast

	Actual 2017	Estimate 2018	Proposed 2019	Projected 2020	Projected 2021	Projected 2022	Projected 2023
Revenues							
Base Rate Revenues	$87.3	$86.0	$84.5	$85.6	$86.7	$88.0	$89.2
TCRF Revenues	4.2	5.6	-	-	-	-	-
ECA Revenues	49.4	50.7	51.0	52.1	54.8	58.5	59.4
Rate Revenues	$141.0	$142.2	$135.5	$137.7	$141.5	$146.5	$148.6
Non-rate Revenues	31.6	40.9	44.0	46.8	52.1	60.0	62.3
Subtotal	$172.6	$183.2	$179.5	$184.5	$193.6	$206.6	$210.9
Planned Use of Reserves	-	13.8	27.6	-	-	0.3	-
Total Revenues	**$172.6**	**$196.9**	**$207.1**	**$184.5**	**$193.6**	**$206.8**	**$210.9**
Expenditures							
Purchased Power & Fuel	$88.8	$76.6	$45.8	$40.9	$38.5	$42.1	$42.9
Transmission of Power	4.2	5.6	12.5	13.0	13.5	14.0	14.5
Operations & Maintenance	22.4	30.0	34.3	35.0	36.0	37.1	38.1
Cost of Service Transfers	12.4	12.5	14.2	14.6	15.0	15.5	15.9
ROI & Franchise Fee	13.1	14.0	15.1	15.5	16.1	16.9	17.3
Debt Service	29.1	34.4	40.7	49.5	49.6	49.4	48.7
Debt Defeasance	-	-	28.6	-	-	-	-
Revenue Funded Capital	-	24.0	15.9	15.2	24.4	31.8	23.0
Total Expenditures	**$170.1**	**$196.9**	**$207.1**	**$183.6**	**$193.1**	**$206.8**	**$200.4**
Net Income	**$2.5**	**$0.0**	**$0.0**	**$0.9**	**$0.5**	**$0.0**	**$10.5**
Base Average Revenue $/kWh	0.0602	0.0582	0.0565	0.0565	0.0565	0.0565	0.0565
Transmission Cost Recovery Factor $/kWh	0.0029	0.0038	0.0000	0.0000	0.0000	0.0000	0.0000
Energy Cost Adjustment $/kWh	0.0361	0.0341	0.0341	0.0344	0.0357	0.0376	0.0376
Total Average Revenue $/kWh	0.0992	0.0961	0.0906	0.0909	0.0922	0.0940	0.0941
Working Capital + Operating Reserve + TCRF & ECA	$76.9	$64.1	$39.2	$45.2	$45.7	$45.5	$56.0
Debt Coverage Ratio - 1.25	1.54	1.01	1.40	1.33	1.34	1.34	1.57

DME Debt

As of 9/30/17 (in Millions)

FY	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	Total
DME Principal & Interest*	$34.4	$40.7	$54.3	$53.5	$52.7	$51.2	$49.8	$47.1	$41.6	$41.3	$40.9	$40.1	$40.2	$37.6	$36.0	$34.5	$31.7	$31.7	$31.8	$31.8	$13.7	$13.8	$13.8	$13.8	$13.8	$13.8	$13.8	$10.4	$6.5	$3.5	$939.7
TMPA Principal & Interest	$23.1	$1.7	$1.7	$1.7	$1.7	$1.7	$1.7	$1.7	$1.7	$1.7	$1.7	$1.7	$1.7	$1.7	$1.7	$1.7	$1.7	$1.7	$1.7	$1.7	$1.7	$1.7	$1.7	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$60.5
Total Principal & Interest	$57.5	$42.4	$56.0	$55.2	$54.4	$52.9	$51.5	$48.8	$43.3	$43.1	$42.6	$41.8	$41.9	$39.3	$37.7	$36.2	$33.4	$33.4	$33.5	$33.5	$15.4	$15.5	$15.5	$13.8	$13.8	$13.8	$13.8	$10.4	$6.5	$3.5	$1,000.3

* Approximately 40% of DME GO/CO Debt is for Transmission Projects

NOTES:
2010 TMPA Scrubber debt is included above in years 2018 - 2025
$16.9 Million of capitalized interest is offset by revenue bond proceeds
As of 9/30/18, Principal & Interest balance will be $905.4 Million

DME Debt As of 9/30/19 (In Millions)

	FY 2014-15 Actual	FY 2015-16 Actual	FY 2016-17 Actual	FY 2017-18 Projected	FY 2018-19 Projected*	FY 2019-20 Projected	FY 2020-21 Projected	FY 2021-22 Projected	FY 2022-23 Projected	FY 2023-24 Projected	FY 2024-25 Projected	FY 2025-26 Projected	FY 2026-27 Projected
Beginning Outstanding Principal	$ 275.1	$ 327.5	$ 359.9	$ 621.6	$ 604.5	$ 563.2	$ 551.2	$ 534.7	$ 520.5	$ 512.3	$ 485.8	$ 460.8	$ 434.7
Interest	112.2	159.8	194.7	318.1	300.9	285.7	269.8	252.0	237.1	228.5	206.3	185.4	165.7
Total Principal & Interest	$ 387.2	$ 487.3	$ 554.6	$ 939.7	$ 905.4	$ 848.9	$ 821.0	$ 786.7	$ 757.6	$ 740.8	$ 692.2	$ 646.2	$ 600.3
New Issues													
GO/CO Principal	$ -	$ -	$ -	$ -	$ 7.6	$ 12.7	$ 9.0	$ 12.0	$ 18.0	$ -	$ -	$ -	$ -
Interest	-	-	-	-	5.3	8.8	6.2	8.3	13.9	-	-	-	-
GO/CO Principal & Interest	$ -	$ -	$ -	$ -	$ 12.8	$ 21.6	$ 15.3	$ 20.3	$ 31.9	$ -	$ -	$ -	$ -
Principal Payoff													
GO/CO Principal	$ -	$ -	$ -	$ (17.1)	$ (48.9)	$ (17.2)	$ (17.5)	$ (17.8)	$ (17.4)	$ (17.2)	$ (15.3)	$ (15.9)	$ (16.3)
GO/CO Interest	-	-	-	(17.2)	(16.0)	(14.2)	(14.0)	(13.5)	(13.2)	(13.3)	(12.6)	(11.9)	(11.2)
GO/CO Principal & Interest	$ -	$ -	$ -	$ (34.4)	$ (64.9)	$ (31.4)	$ (31.5)	$ (31.4)	$ (30.6)	$ (30.5)	$ (27.9)	$ (27.8)	$ (27.4)
Revenue Bond Principal	$ -	$ -	$ -	$ -	$ -	$ (7.6)	$ (8.0)	$ (8.4)	$ (8.8)	$ (9.3)	$ (9.7)	$ (10.2)	$ (10.7)
Revenue Bond Interest	-	-	-	-	(4.5)	(10.5)	(10.1)	(9.7)	(9.3)	(8.8)	(8.3)	(7.9)	(7.4)
Revenue Bond Principal & Interest	$ -	$ -	$ -	$ -	$ (4.5)	$ (18.1)	$ (18.1)	$ (18.1)	$ (18.1)	$ (18.1)	$ (18.1)	$ (18.1)	$ (18.1)
Ending Outstanding Principal	$ 327.5	$ 359.9	$ 621.6	$ 604.5	$ 563.2	$ 551.2	$ 534.7	$ 520.5	$ 512.3	$ 485.8	$ 460.8	$ 434.7	$ 407.7
Ending Outstanding Interest	159.8	194.7	318.1	300.9	285.7	269.8	252.0	237.1	228.5	206.3	185.4	165.7	147.1
Ending Outstanding Principal & Interest	**$ 487.3**	**$ 554.6**	**$ 939.7**	**$ 905.4**	**$ 848.9**	**$ 821.0**	**$ 786.7**	**$ 757.6**	**$ 740.8**	**$ 692.2**	**$ 646.2**	**$ 600.3**	**$ 554.8**
Debt Service Payment													
Principal	$ 13.8	$ 15.1	$ 14.0	$ 17.1	$ 48.9	$ 24.8	$ 25.5	$ 26.2	$ 26.2	$ 26.5	$ 25.0	$ 26.1	$ 27.0
Interest	11.8	14.0	15.2	17.2	20.4	24.7	24.1	23.2	22.5	22.1	20.9	19.8	18.6
Total	$ 25.6	$ 29.1	$ 29.1	$ 34.4	$ 69.3	$ 49.5	$ 49.6	$ 49.4	$ 48.7	$ 48.6	$ 46.0	$ 45.9	$ 45.5

* Includes pay off of $28.6 Million for 2010 TMPA Related Callable Scrubber Debt – Results in interest savings of $3.7 Million from 2020 - 2025

Key Purchased Power Assumptions

- DEC operational by July 2018
- TMPA (Gibbons Creek) operational through September 2018
- Forward ERCOT market prices as per S&P Global forecast and past market profiles
- Bluebell Solar I operational in January 2019
- Santa Rita Wind operational in April 2018
- Natural Gas prices as per NYMEX forward curve plus applicable transportation and adder
- Existing and planned purchased resources priced as per contract
- Load forecast updated to reflect 2017 actual as validated by PRT consultants

Denton Municipal Electric
Purchased Power Forecast Sensitivity Analysis

- In order to evaluate the impact on DME's FY18 and FY19 budgets of a "softened" ERCOT market (and thus lower power sales revenues), staff ran a more normal ERCOT market case for the high-priced summer period.
- Although power sales revenues were significantly reduced (i.e. the DEC reduced by $11M and TMPA reduced by $4M in FY19), most of the reduced sales revenue were offset by lower LOAD purchased costs.
  - Resulted in an increased Purchased Power budget of $2M and 2.6M in FY18 and FY19, respectively
- This is because all ERCOT electric utilities must purchase electricity for their entire load demand at the Load Zone price point.
- Similarly, all ERCOT electric utilities are paid for their Power Resources at their respective delivery node price (identical to Load Zone price adjusted for Congestion).

DEC Proforma Assumptions

- Average heat rate (efficiency) of 8300 BTU/KWH
- Natural gas price as per NYMEX forward curve adjusted for delivery basis and supplier adder
- No forced outage or scheduled maintenance assumed for FY19
- A portion of DEC capacity is reserved for providing A/S (ancillary services) when the cost of providing A/S from DEC is less than market prices
- Forward ERCOT market price profile as per S&P Global forecast and past/expected market profiles
- DEC annual operating hours limited by NOx emissions permit limits (approximately 3100 hours)
- Estimated variable O&M cost (items such as consumables such as lube oil, SCR catalyst, minor wear parts etc.) are added to fuel price to establish minimum dispatch price/cost
- Debt service as per associated bond repayment schedule for debt projected to be used for DEC
- Other DEC related expenses such as labor, materials & supplies, maintenance, insurance as per operating budget estimates

Denton Energy Center Proforma

	2017-18 ESTIMATE*	2018-19 PROPOSED	2019-20 PROJECTED	2020-21 PROJECTED	2021-22 PROJECTED	2022-23 PROJECTED
DEC REVENUE	**$ 31,010,383**	**$ 36,304,634**	**$ 37,124,788**	**$ 28,742,764**	**$ 20,774,628**	**$ 19,570,587**
EXPENDITURE SUMMARY						
Energy Expense	$ 9,051,826	$ 14,967,553	$ 17,684,174	$ 13,561,900	$ 11,405,388	$ 10,266,033
Personal Services	431,000	1,866,872	1,922,878	1,980,564	2,039,981	2,101,181
Materials & Supplies	309,750	138,694	142,855	147,140	151,555	156,101
Maintenance & Repair	250,000	258,500	266,255	274,243	282,470	290,944
Insurance	216,680	353,351	363,951	374,870	386,116	397,699
Miscellaneous		1,984	1,984	1,984	1,984	1,984
Operations	457,000	818,150	842,695	867,975	894,015	920,835
Debt Service - Principal	-	-	7,227,261	7,599,113	7,985,266	8,395,255
Debt Service - Interest	-	4,452,083	10,463,286	10,074,133	9,665,236	9,235,579
Transfer to Capital Projects	15,000	15,000	15,000	15,000	15,000	15,000
DEC EXPENDITURES	**$ 10,731,256**	**$ 22,872,187**	**$ 38,930,339**	**$ 34,896,922**	**$ 32,827,010**	**$ 31,780,612**
DEC NET INCOME	**$ 20,279,127**	**$ 13,432,447**	**$ (1,805,551)**	**$ (6,154,158)**	**$ (12,052,382)**	**$ (12,210,025)**

* Labor costs will be capitalized during construction of Power Plant

Departmental Presentation

Denton Municipal Electric Position Summary

Personnel (FTE)	FY 2014-15 Actuals	FY 2015-16 Actuals	FY 2016-17 Actuals	FY 2017-18 Budget	FY 2017-18 Estimate	FY 2018-19 Proposed
Regular	174.00	188.00	197.00	199.00	199.00	185.00

Department	Position	FTE	Position Description
DEC	Power Plant Operator Power Plant Control Room Operator C	1 1	Proposing 2 additional Power Plant Operators in order to be able to provide 24-hour coverage for Power Plant.
Department	**Position**	**FTE**	**Position Description**
Distribution	Logistics Supervisor Materials Specialist Pole Yard Maintenance	(1) (1) (1)	Three employees were transferred from DME to Materials Management.
Department	**Position**	**FTE**	**Position Description**
Safety & Training	Safety Specialist Utility Safety & Training Superintendent	(1) (1)	Two employees were transferred from DME to Risk Management.
Department	**Position**	**FTE**	**Position Description**
Communications	All	(11)	All employees were transferred from DME to Technology Services.

Denton Municipal Electric Goals and Accomplishments

- Satisfy the objectives of the Denton Renewable Resource Plan which includes:
  - Bringing Denton to 100% renewable by 2020
  - Integrating additional diversified resources into Denton's Resource Portfolio
- Continue to upgrade electric infrastructure, including design and eventual construction of two state-of-the-art SF6 gas insulated substations, to prepare early for Denton's customer and load growth.
- Remain in compliance with all national, state and local electric utility requirements during the constantly changing regulatory climate.
- Maintain competitive rates by continuing to manage power supply and internal costs while managing the capital improvement program in a fiscally sound manner.
- Implement safety training for employees that is position-specific with a goal of zero lost time accidents.

Denton Municipal Electric Goals and Accomplishments

- The Denton Energy Center has reached “mechanical completion,” ahead of schedule and under budget. Operational testing has begun with a projected commercial operation date of July 1, 2018.
- DME reconstructed and energized the Bonnie Brae Substation to North Lakes Substation transmission line and the Denton North Substation to North Lakes Substation transmission line segments.
- Jim Christal Substation was energized in January 2018 (including the transmission line construction required to connect the station to the 138kV transmission system).
- DME has moved from Gold to Platinum level with APPA’s electric reliability award called “RP3” (Reliable Public Power Provider).

Denton Municipal Electric Process Improvements

- Continued installation of “trip-saver devices” on the distribution system to minimize duration of outages and decrease the number of customers affected during an outage event.
- Undertake needed activities to convert existing HPS (high pressure sodium) to more reliable and efficient LED street lights.
- Continue improving system reliability by completing more feeder sweeps and installing advanced wildlife protection on exposed equipment.
- Complete underground electric cable rehabilitation project in the vicinity of West Windsor and Green Oaks to improve reliability of service in the area.
- Integrating new renewable resources in the DME power supply portfolio in a cost effective and reliable manner.

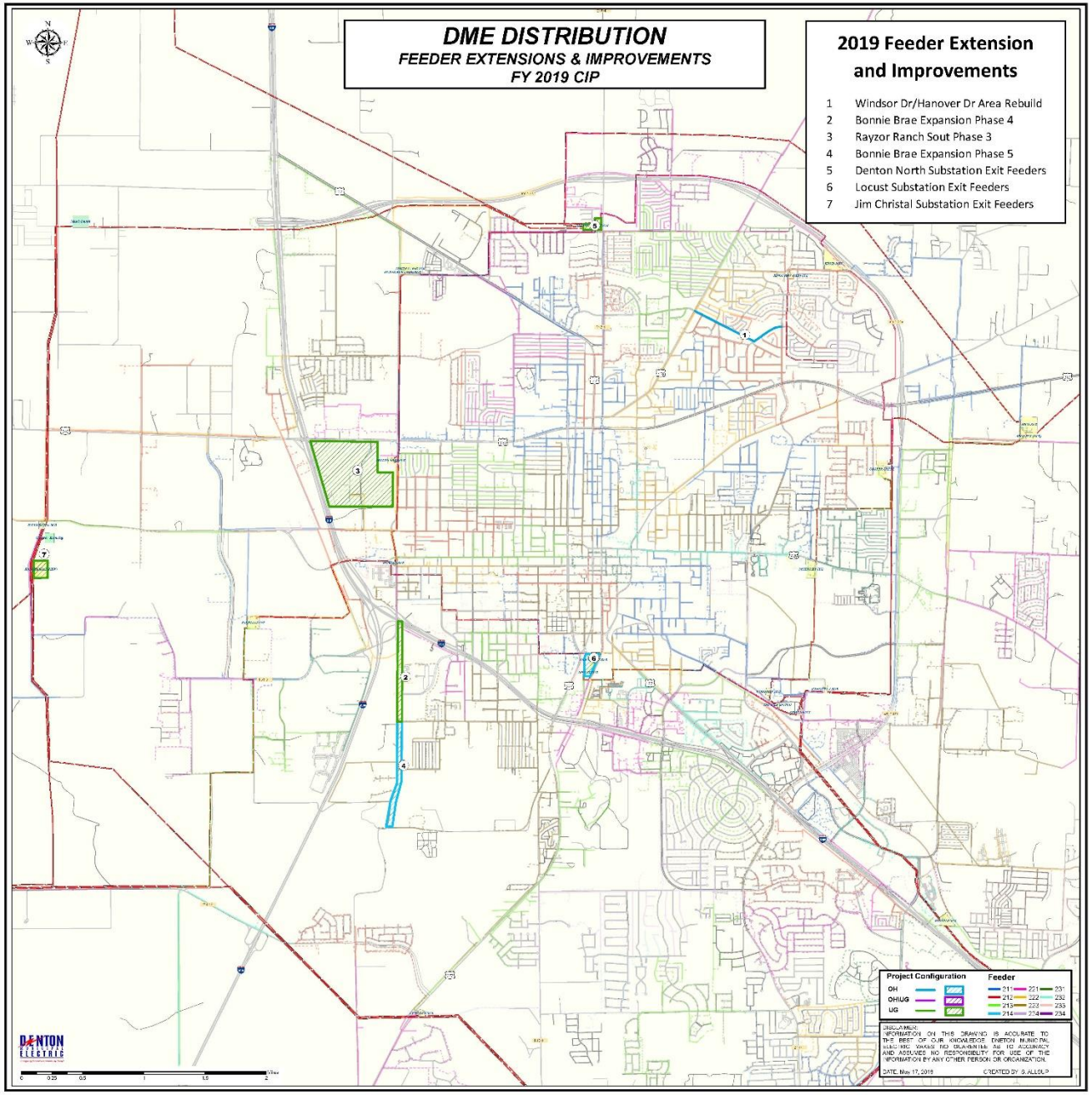
Denton Municipal Electric
5 Year Capital Plan

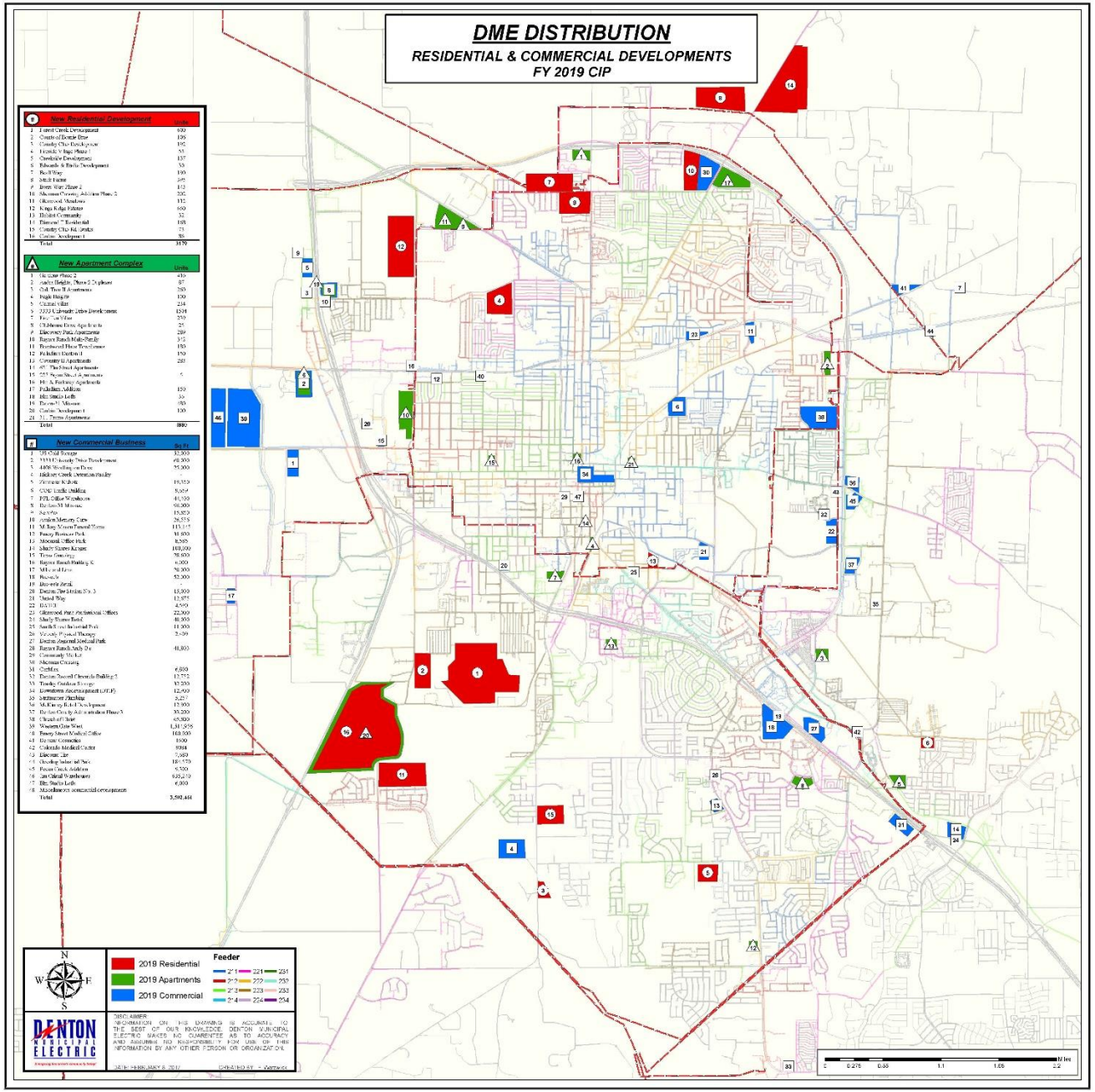
2019-2023 Capital Improvements Plan
Cash Requirements - Electric

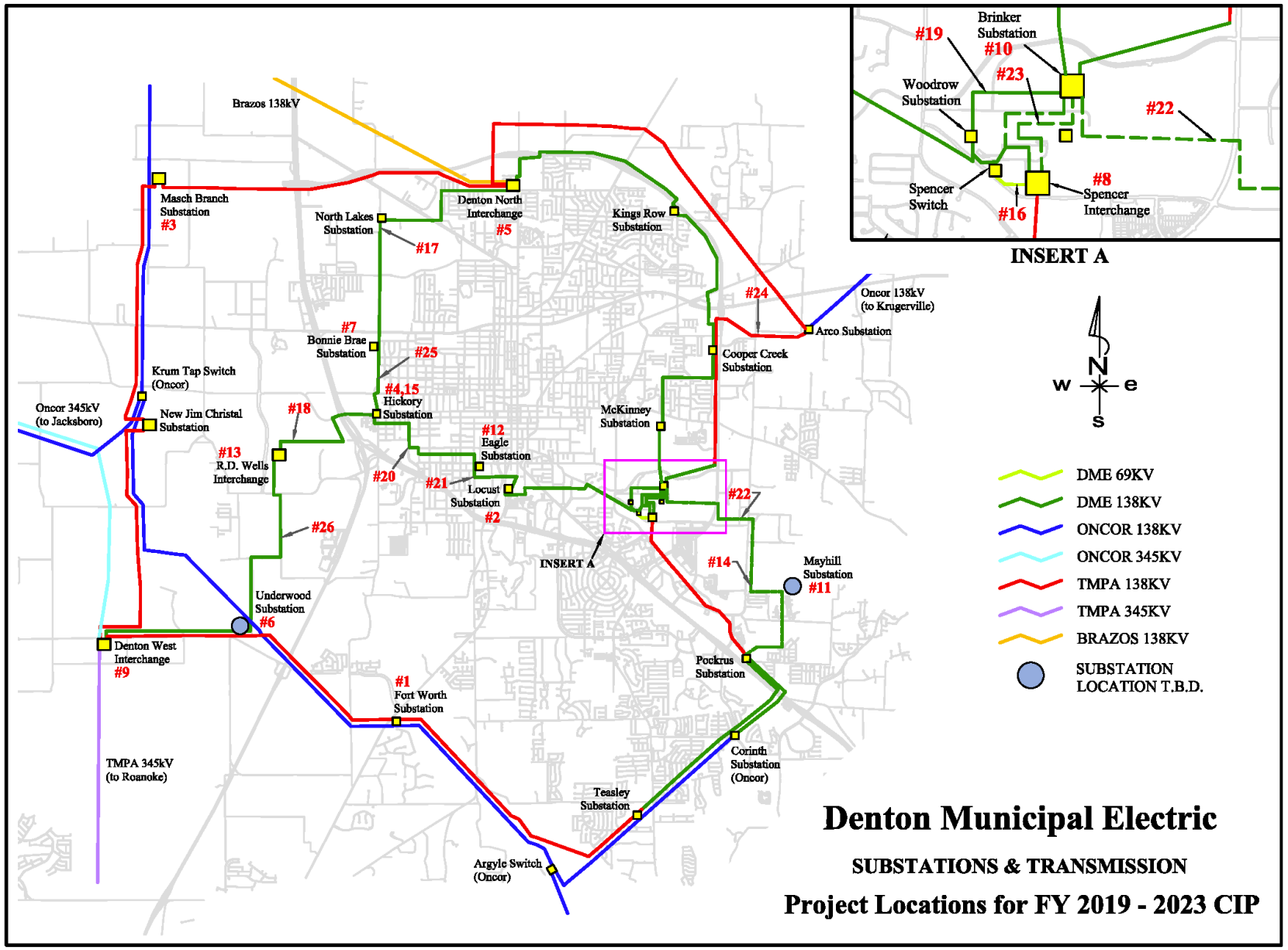
Group	Assignment Categories	2019	2020	2021	2022	2023	Total
001	AUTOMATED METER READING	$ 930,000	$ 929,950	$ 968,108	$ 916,484	$ 958,110	$ 4,702,652
003	BUILDING CONSTRUCTION	1,000,000					1,000,000
007	COMMUNICATIONS EQUIPMENT	335,000	335,000	335,000	335,000	335,000	1,675,000
013	DISTRIBUTION SUBSTATIONS	2,530,000	2,400,000	1,153,000	2,320,000	6,860,000	15,263,000
014	DISTRIBUTION TRANSFORMERS	1,260,000	1,266,300	1,272,632	1,278,996	1,285,390	6,363,318
019	FEEDER EXTENSIONS & IMPROVEMENTS	4,250,000	4,462,500	4,685,626	4,919,905	5,165,903	23,483,934
025	NEW RESIDENTIAL & COMMERCIAL	2,800,000	2,940,000	3,087,000	3,241,350	3,403,418	15,471,768
028	OVER TO UNDER CONVERSIONS	500,000	500,000	500,000	500,000	500,000	2,500,000
032	POWER FACTOR IMPROVEMENT	40,000	40,000	40,000	40,000	40,000	200,000
040	STREET LIGHTING	1,700,000	1,710,000	220,500	231,525	243,100	4,105,125
043	TOOLS & EQUIPMENT	30,000	30,000	30,000	30,000	30,000	150,000
050	VEHICLES	541,335	572,450	2,102,000	1,610,275	2,029,500	6,855,560
	DISTRIBUTION TOTAL	$ 15,916,335	$ 15,186,200	$ 14,393,866	$ 15,423,535	$ 20,850,421	$ 81,770,357
045	TRANSMISSION LINES	100,000	6,870,000	6,925,000	10,070,000	15,660,000	39,625,000
046	TRANSMISSION SUBSTATION	7,490,000	5,879,000	12,140,000	18,328,000	4,490,000	48,327,000
	TRANSMISSION TOTAL	$ 7,590,000	$ 12,749,000	$ 19,065,000	$ 28,398,000	$ 20,150,000	$ 87,952,000
Grand Totals		**$ 23,506,335**	**$ 27,935,200**	**$ 33,458,866**	**$ 43,821,535**	**$ 41,000,421**	**$ 169,722,357**
	Aid in Construction	456,949	480,000	503,264	527,997	553,763	2,521,973
	C.O.	7,590,000	12,749,000	9,015,000	11,991,000	18,040,000	59,385,000
	Revenue	15,459,386	14,706,200	23,940,602	31,302,538	22,406,658	107,815,384
	Utility Bonds	-	-	-	-	-	-
Grand Totals		**$ 23,506,335**	**$ 27,935,200**	**$ 33,458,866**	**$ 43,821,535**	**$ 41,000,421**	**$ 169,722,357**

CIP Maps

- DME Substations & Transmission – Project Locations for FY 2019 - 2023
- DME Distribution – Feeder Extension & Improvements FY 2018
- DME Distribution – Residential & Commercial FY 2018


DME DISTRIBUTION
FEEDER EXTENSIONS & IMPROVEMENTS
FY 2019 CIP
2019 Feeder Extension and Improvements
1 Windsor Dr/Hanover Dr Area Rebuild
2 Bonnie Brae Expansion Phase 4
3 Rayzor Ranch Sout Phase 3
4 Bonnie Brae Expansion Phase 5
5 Denton North Substation Exit Feeders
6 Locust Substation Exit Feeders
7 Jim Christal Substation Exit Feeders
Project Configuration
OH
OH/UG
UG
Feeder
DENTON MUNICIPAL ELECTRIC


DME DISTRIBUTION
RESIDENTIAL & COMMERCIAL DEVELOPMENTS
FY 2019 CIP
New Residential Development
New Apartment Complex
New Commercial Business
2019 Residential
2019 Apartments
2019 Commercial
Feeder
DENTON MUNICIPAL ELECTRIC


Brazos 138kV
Masch Branch Substation #3
North Lakes Substation
#17
Denton North Interchange #5
Kings Row Substation
#24
Oncor 138kV (to Krugerville)
Arco Substation
#7
Bonnie Brae Substation
#25
Cooper Creek Substation
Krum Tap Switch (Oncor)
#4,15
Hickory Substation
Oncor 345kV (to Jacksboro)
New Jim Christal Substation
#18
McKinney Substation
#12
Eagle Substation
#13
R.D. Wells Interchange
#20
#21
Locust Substation #2
#22
#26
INSERT A
#14
Mayhill Substation #11
Underwood Substation #6
Denton West Interchange #9
#1
Fort Worth Substation
Pockrus Substation
TMPA 345kV (to Roanoke)
Corinth Substation (Oncor)
Teasley Substation
Argyle Switch (Oncor)
Brinker Substation
#19
#10
#23
Woodrow Substation
#22
Spencer Switch
#16
#8
Spencer Interchange
INSERT A
N
w
e
s
DME 69KV
DME 138KV
ONCOR 138KV
ONCOR 345KV
TMPA 138KV
TMPA 345KV
BRAZOS 138KV
SUBSTATION LOCATION T.B.D.
Denton Municipal Electric
SUBSTATIONS & TRANSMISSION
Project Locations for FY 2019 - 2023 CIP

Substation & Transmission Line Project Cost Summary 2019 -2023

Substation and Transmission Line Project Cost Summary
For the 2019 - 2023 CIP

Transmission Stations and Transmission Cost (cc046)

Map #		2019	2020	2021	2022	2023	Total Project Cost
1	**Fort Worth Substation:** Replace the F440 primary 311L transmission line relay with a 411L relay to match remote terminal.	$20,000					$20,000
2	**Locust Substation:** Construct a new 138kV - 13.2kV substation on a new site to replace the existing Locust Substation. The existing Locust Substation does not have sufficient space to facilitate reconstruction or for conversion to 138kV operation on the current site. The existing substation bus does not have the capacity required by contingency planning criteria. Future use of the original site has not been determined. Reconstruction will include space for the addition of a transmission voltage capacitor. 2019 cost is for final commissioning. (603233)	$165,000					$165,000
3	**Masch Branch Substation:** Construct a new 138kV substation in the northwest area of DME's service territory. The station will be designed with the capability to intertie TMPA 138kV transmission lines with an Oncor or other 138kV transmission in the future. The station will be placed in service in the early part of FY 2019. (603286)	$185,000					$185,000
4	**Hickory Substation:** Construct a new 138kV - 13.2kV gas insulated substation on a new site to replace the existing Hickory Substation. The existing site is not large enough to allow construction of the new facilities. The existing switchgear and transformers are approaching the ends of their service lives and must be replaced. (603234)	$6,000,000	$4,700,000	$1,800,000			$12,500,000
5	**Denton North Interchange:** Expand the site for access and drainage. Install drainage to accommodate development of the area north and west of the site.	$360,000					$360,000
	Denton North Interchange: Transmission cost to install a second 28MVA substation power transformer to serve distribution load.				$156,000		$156,000
6	**Underwood Substation:** Construct a new 138kV - 13.2kV substation to meet the needs of growth and maintain reliability for the western and southwestern areas of DME's service territory. Land cost in 2019. (603289)	$470,000			$2,872,000	$3,060,000	$6,402,000
7	**Bonnie Brae Substation:** Replace five 69kV circuit breakers with 138kV circuit breakers; upgrade transmission line relaying (411L relays). Replace 69kV PT's and arresters with 138kV PT's and arresters. Convert to 138kV operation. Install 138kV EPS metering CT's. Replace two SEL 735 meters with 734 meters, and install two additional SEL 734 meters to provide ERCOT EPS metering (603725)		$625,000				$625,000
8	**Spencer Interchange 69kV Reconstruction:** Reconstruct the 69kV section of the Spencer Interchange to add a breaker and switches to the low side of the autotransformer.		$180,000	$290,000			$470,000
9	**Denton West Interchange:** Construction to upgrade bus supports to match the structural requirements of higher fault currents. (Reimbursable from TMPA)			$380,000			$380,000
	Denton West Interchange: Reconfigure the bus and relocate the 30 MVA, 138kV capacitor so that it can serve either main 138kV bus. (Reimbursable from TMPA)				$425,000		$425,000
	Denton West Interchange: Install two new 138kV transmission line terminals for two new transmission lines constructed by Brazos Electric Cooperative. (Reimbursable from TMPA)					$580,000	$580,000

Substation and Transmission Line Project Cost Summary
For the 2019 - 2023 CIP

Transmission Stations and Transmission Cost (cc046) (continued)

Map #		2019	2020	2021	2022	2023	Total Project Cost
10	**Brinker Substation:** Construct a new station to provide a major transmission intertie point. The station will provide terminal space for up to 10 transmission lines, up to two 138kV-69kV autotransformers, and up to five substation power transformers. Three substation power transformers and six transmission lines will be installed initially. Future expansion will be possible without increasing the size of the station. The scope of this project includes addition of an autotransformer in the later years of the CIP. (603290)		$84,000	$1,800,000	$9,810,000		$11,694,000
11	**Mayhill Substation:** Construct a new 138kV - 13.2kV substation to meet the needs of growth and maintain reliability for the eastern and southeastern areas of DME's service territory. (603391)						
12	**Eagle Substation:** Construct a new 138kV - 13.2kV gas insulated substation to meet the needs of growth and maintain reliability in the central areas of Denton. City council has selected a site for the substation on the southeast quadrant of the intersection of Eagle and Bernard. (603200)			$7,470,000	$4,555,000		$12,025,000
13	**RD Wells Interchange:** Reconfigure station to remove two 138kV to 69kV autotransformers and feed the Hickory Substation transmission line directly from the 138kV bus.					$450,000	$450,000
-	**Replace EPS metering CT's at Multiple Stations:**			$110,000	$110,000	$110,000	$330,000
-	**Install Auxiliary CT's for Transformer Differentials in Multiple Stations:** Install auxiliary CT's for each distribution transformer in KR, CC, MK, WR, PK, and NL. This addition is required to match line and station capacities to avoid having breaker CT's be the most limiting elements for transmission flows.				$110,000		$110,000
-	**Ethernet Security Gateway Relays at Multiple Stations:** Installation of SEL 3610, 3620, and 2730 SEL relays at multiple stations to protect critical cyber assets.	$150,000	$150,000	$150,000	$150,000	$150,000	$750,000
-	**Substation Security (Transmission Cost)**	$140,000	$140,000	$140,000	$140,000	$140,000	$700,000
Total Transmission Cost for Stations		**$7,490,000**	**$5,879,000**	**$12,140,000**	**$18,328,000**	**$4,490,000**	**$48,327,000**

Substation and Transmission Line Project Cost Summary
For the 2019 - 2023 CIP

Transmission Lines (cc045)

Map #		2019	2020	2021	2022	2023	Total Project Cost
14	**Pockrus - Mayhill Transmission Line Phase 1:** Construct one segment of a new 138kV transmission line from Pockrus to the new Mayhill Substation. This phase of construction will be double circuit and will only construct the portion of line across the Timberlinks property. All construction will have underbuild. (600755)	$100,000					$100,000
	Pockrus - Mayhill Transmission Line Phase 2: Complete construct of a new 138kV transmission line from Pockrus Substation to the new Mayhill Substation site. All construction will have underbuild. The new line segment is needed to provide additional capacity and an alternate route to the existing TMPA Pockrus - Spencer Interchange 138kV transmission line and serve the new Mayhill Substation. Phase 1 constructed the segment across the Timberlinks property. The location of the new Mayhill Substation will determine the exact length and cost.					$1,000,000	$1,000,000
15	**Hickory Substation Transmission Line Upgrades:** Reconstruct the Hickory ends of the transmission lines from the Bonnie Brae and RD Wells substations to connect the new Hickory Substation. The project will include approximately 900 feet of underground transmission line.		$4,350,000	$3,000,000			$7,350,000
16	**Spencer Interchange - Spencer Switch:** Reconstruct approximately 1,200 feet of existing 69kV transmission line from the Spencer Interchange to the Spencer Switch to provide the capacity needed to meet the requirements of contingency planning criteria.		$290,000				$290,000
17	**Bonnie Brae - North Lakes Transmission Line:** Retire two spans and install one new span of 138kV conductor to reconnect the Bonnie Brea transmission line to the new North Lakes Substation.			$45,000			$45,000
18	**Convert RD Wells - Hickory TM Line to 138kV Operation:** Install three spans of transmission line in the RD Wells Interchange to connect the Hickory TM Line to the 138kV bus. (604087)			$210,000			$210,000
19	**Woodrow - Brinker Transmission Line Phase 2:** Reconstruct approximately 2,280 feet of 138kV transmission line between the Woodrow Substation and new Brinker Substation site to provide the capacity to match the Brinker to McKinney line and to provide space for the Spencer Interchange to Brinker lines. Construction of this line must be completed before the Brinker to Spencer transmission line construction. Phase 1 completion in 2018.			$1,300,000			$1,300,000
20	**Hickory - Eagle Transmission Line:** Reconstruct approximately 1.5 miles of existing transmission line to replace aging facilities and provide the capacity needed to meet the requirements of contingency planning criteria. The line will be reconstructed for operation at 138kV. The budget numbers reflect 0.2 mi. underground transmission (total for the underground at both the Eagle and Hickory ends). The amounts for the project include the cost for purchase of additional easements. (602949)			$1,200,000	$5,500,000	$1,130,000	$7,830,000
21	**Eagle - Locust Transmission Line Phase 2:** Reconstruct approximately 1 mile of existing transmission line to replace aging facilities and provide the capacity needed to meet the requirements of contingency planning criteria. The line will be reconstructed for operation at 138kV. The amounts for the project include the cost for purchase of additional easements. Phase 1 completion in 2018.				$1,090,000	$4,100,000	$5,190,000

Substation and Transmission Line Project Cost Summary
For the 2019 - 2023 CIP

Transmission Lines (cc045) (Continued)

Map #		2019	2020	2021	2022	2023	Total Project Cost
22	**Mayhill - Brinker/Spencer Interchange Transmission Line Phase 2:** Construct approximately 1 mile of new 138kV double circuit transmission line from the Mayhill Substation site to behind Tractor Supply. Reconstruct approximately .75 miles of 138kV double circuit transmission line from behind Tractor Supply to the new Brinker Substation and to Spencer Interchange. All construction will have distribution underbuild. The new line is needed to provide additional capacity and an alternate route to the existing TMPA Pockrus - Spencer Interchange 138kV transmission line, and the new line will complete the transmission loop that will serve the new Mayhill Substation. The route for this line has not been determined. Consequently, the line length could change. Phase 1 completion in 2018.				$980,000	$3,450,000	$4,430,000
23	**Brinker - Spencer Interchange Transmission Line:** Construct approx. .5 miles of new transmission line from the new Brinker Substation to Spencer Interchange. Construction of this line must be coordinated with construction of the Woodrow to Brinker transmission line which must be completed first. (603500)				$1,400,000		$1,400,000
24	**Arco - Cooper Creek Transmission Line Reconstruction:** Reconstruct approximately 1.5 miles of Arco Substation to Cooper Creek Substation 138kV transmission line to provide the additional capacity needed to meet the requirements of contingency planning criteria. (603511)		$2,230,000	$1,170,000			$3,400,000
25	**Hickory - Bonnie Brae Transmission Line Upgrade/Relocation:** Construction cost to upgrade and/or relocate the Hickory Substation to Bonnie Brae Substation transmission line in conjunction with City of Denton widening of Bonnie Brae Street and reconstruction of the Hickory Substation.				$1,100,000	$1,000,000	$2,100,000
26	**RD Wells to Denton West TM Line:** Reconstruct approximately 4.5 miles of 138kV transmission line from RD Wells Interchange to Denton West Interchange to provide the capacity needed to meet the requirements of contingency planning criteria.					$4,450,000	$4,450,000
6	**Transmission Line Additions to Support the Underwood Substation:** Construct transmission line facilities to connect the proposed new Underwood Substation.					$530,000	$530,000
Total Transmission Line Cost for Circuits		**$100,000**	**$6,870,000**	**$6,925,000**	**$10,070,000**	**$15,660,000**	**$39,625,000**

Substation and Transmission Line Project Cost Summary
For the 2019 - 2023 CIP

Distribution Stations (cc013)

Map #		2019	2020	2021	2022	2023	Total Project Cost
2	**Locust Substation Completion (FY 2017/18):** Distribution cost for reconstruction of the Locust Substation on a new site.	$45,000					$45,000
3	**Masch Branch Substation:** Distribution cost for addition of one 138kV - 13.2kV transformer and switchgear building.						
4	**Hickory Substation:** Distribution cost for reconstruction of the Hickory Substation on a new site. (603234)	$2,115,000	$2,380,000	$600,000			$5,095,000
5	**Denton North Interchange:** Install a second 28MVA substation power transformer to serve distribution load.					$1,200,000	$1,200,000
6	**Underwood Substation:** Distribution cost for construct of a new 138kV - 13.2kV substation to meet the needs of growth and maintain reliability for the western and southwestern areas of DME's service territory. (603289)	$330,000			$300,000	$4,340,000	$4,970,000
10	**Brinker Substation:** Distribution cost for construction of a new 138kV - 13.2kV substation to meet the needs and maintain reliability. (603290)			$50,000	$2,000,000	$700,000	$2,750,000
11	**Mayhill Substation:** Distribution cost for construction of a new 138kV - 13.2kV substation to meet the needs of growth and maintain reliability for the eastern and southeastern areas of DME's service territory (603391)					$600,000	$600,000
13	**RD Wells Interchange:** Commission 4th distribution transformer and building.	$20,000					$20,000
-	**RTU Upgrades:** Replace older RTU's in stations to allow for Ethernet capabilities.	$20,000	$20,000	$20,000	$20,000	$20,000	$100,000
-	**SCADA Master Computer Replacement:** Replace master SCADA computer every 4 years.			$400,000			$400,000
-	**SCADA Equipment & Upgrade**			$83,000			$83,000
Total Distribution Substation Cost		**$2,530,000**	**$2,400,000**	**$1,153,000**	**$2,320,000**	**$6,860,000**	**$15,263,000**
Grand Total Costs for the CIP (Includes Costs Accrued in Prior Years)		**$10,120,000**	**$15,149,000**	**$20,218,000**	**$30,718,000**	**$27,010,000**	**$103,215,000**

Denton Municipal Electric

Questions / Comments