

Kentucky Municipal Energy Agency

Projections of All Requirements (“AR”) Costs and Rates
For Use in the AR Members’ Planning Processes

For January 25, 2018 KyMEA Board Meeting

prepared 1/23/2018

Topics for Discussion

1. **Purpose** – Projections to Support Member Planning Efforts
2. **Updates** – Will be made in Late 2018 to determine the KyMEA AR Rates Effective May 1, 2019
3. **Process** – for Determining KyMEA's AR Budget and Rates
4. **Projected Revenues and Costs**
5. **Competitive Comparison** - to KU's Rates
6. **Highlights** - Summary and Conclusions

Purpose:

Prepare Projections of All Requirements (AR) Costs and Rates to Support the AR Members' Planning Processes

- 1. The projections of rates and costs in this presentation have been developed at the request of the KyMEA AR Members to be used for the Members' planning purposes.**
- 2. In late 2018 or very early 2019, the KyMEA Project Committee and Board will complete an update of these cost projections and the resultant rates and charges to the AR Members. At that time, the rates and charges to be effective May 1, 2019 will be determined.**
- 3. The projections presented in this presentation are purposely conservative in several respects.**
- 4. However, the following slide lists several factors that will need to be updated in late 2018. The updates may cause the initial budgeted costs and rate levels adopted at that time to be higher or lower than the cost and rate projections in this presentation.**

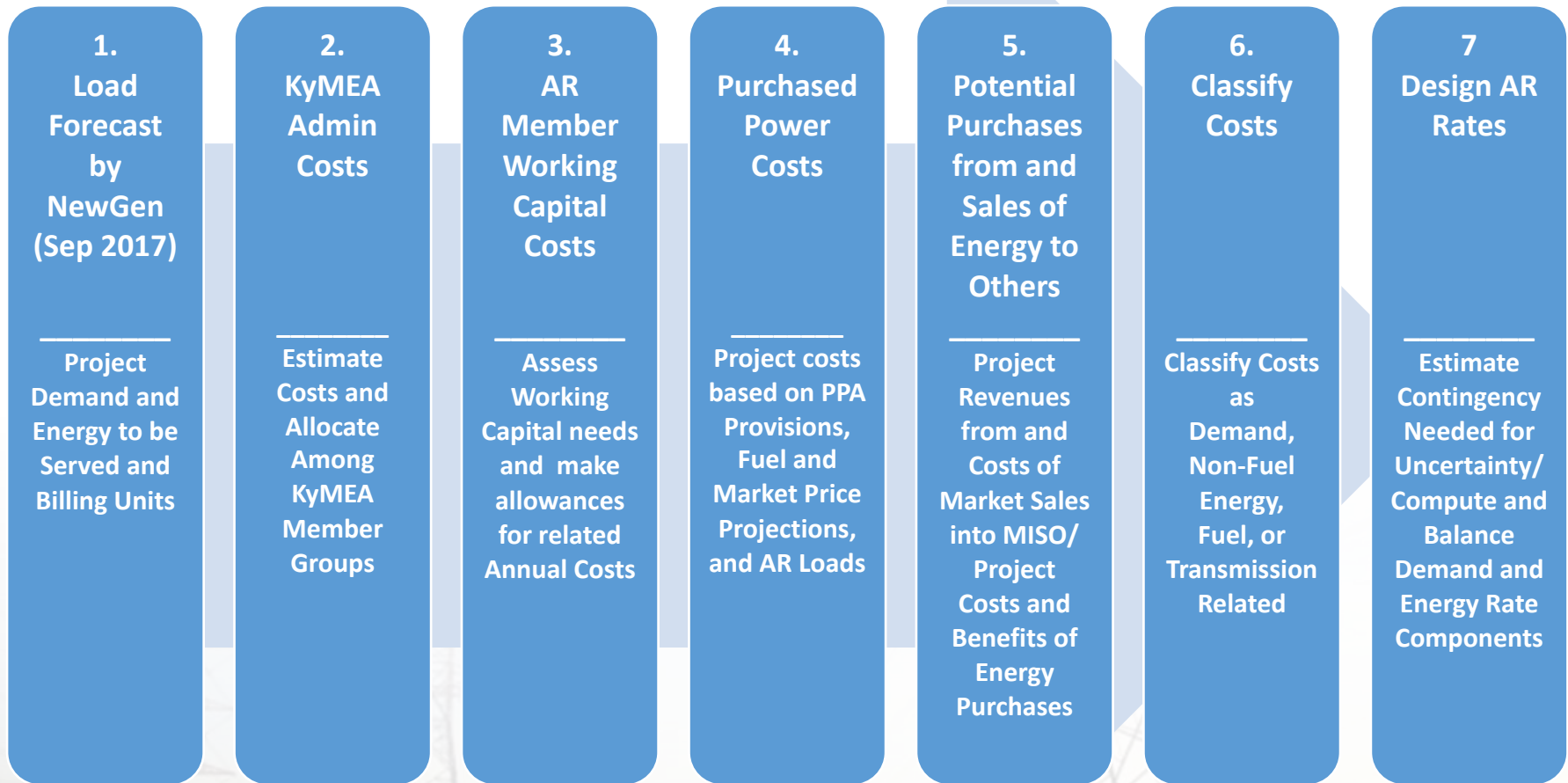
Updates:

To Factors that may Impact KyMEA's Rates and Charges to the AR Members Placed into Effect May 1, 2019

- 1. Fall 2018 Updates to Load Forecasts for the AR Members**
- 2. Implementation of KyMEA Staffing Plans and Energy Management Contract Terms**
- 3. Arrangements with KyMEA Members that are not part of the AR Project**
- 4. Portfolio Decisions – Capacity and/or Energy Sales, Timing of Solar Project**
- 5. Fuel and Market Energy Price Projection Updates**
- 6. Implementation of Arrangements for Working Capital and Liquidity**
- 7. Capital Budget Items – Metering and other Equipment**
- 8. Rate Policy and Strategy re: Competitive Considerations, Contingency, and Rate Stabilization**

Process:

Used to Determine KyMEA's AR Costs and Rates



Components of KyMEA's Rates -- Similar Components to KU's Wholesale Rates

Main Components of Monthly Charges	How Charge is Computed?	Costs Recovered thru the Charge
Component	A Rate Multiplied by:	
1. Demand Charge	Monthly Member Peak Demand (kW)	Fixed Costs and Costs of Production Capacity For Peak Loads and to Economically Meet Energy Requirements
2. Base Energy Charge	Monthly Energy (kWh)	Fuel and Other Variable Costs of Purchasing or Producing Energy
3. Energy Cost Adjustment (ECA)	Monthly Energy (kWh)	Captures Variances between Actual Energy Costs and Costs Recovered through the Base Energy Charge
4. LGE/KU OATT	Monthly Member Demand at Time of Trans. System Peak (kW)	Network Transmission Service and Scheduling Costs under the LGE/KU Transmission Tariff

Projected AR Revenues Requirements -- FYE June 2019 thru 2023

(Note: For conservatism, excludes benefits of market transactions. See Slides 22 and 23.)

	AR Project Costs		2019	2020	2021	2022	2023
	Purchased Power Charges		(2 months)				
5	For Service to AR Members	(\$000)	9,481	65,605	66,731	67,516	66,353
6	Due to Sales to Others	(\$000)	-	-	-	-	-
7	Subtotal - Purchased Power	(\$000)	9,481	65,605	66,731	67,516	66,353
	Transmission and Ancillary Charges						
8	LGEE/MISO	(\$000)	1,215	6,945	7,091	7,265	7,749
9	PJM/EKPC Transmission	(\$000)	-	-	-	-	-
10	Subtotal - Transmission/Ancillary	(\$000)	1,215	6,945	7,091	7,265	7,749
11	Working Capital related Costs	(\$000)	348	2,085	2,085	2,085	2,085
12	KyMEA Administration Costs	(\$000)	190	1,174	1,209	1,246	1,283
13	Scheduling and Dispatch Costs	(\$000)	105	650	669	689	710
14	Delivery Facilities and Metering Costs	(\$000)	-	-	-	-	-
15	Total Projected Costs	(\$000)	11,339	76,458	77,786	78,801	78,180
	Contingencies and Rate Stabilization Deposits						
16	Contingency/Rate Stabilization	(\$000)	2,792	3,540	3,600	3,645	3,608
17	Margin on Sales to Others	(\$000)	-	-	-	-	-
18	Sub-total	(\$000)	2,792	3,540	3,600	3,645	3,608
19	Total Projected Revenue Requirements	(\$000)	14,130	79,999	81,386	82,446	81,788

Summary of Charges to AR Members

FYE June 2019 thru 2023

			2019	2020	2021	2022	2023
	AR Power Supply Charges		(2 months)				
41	AR Production Demand and Energy Charges	(\$000)	13,142	74,344	75,610	76,552	75,771
42	Average Charge	\$/MWh	57.73	54.06	54.72	55.06	54.17
	Pass-through of LGE/KU Transmission Charges						
43	LGE/KU NITS and Scheduling Charges	(\$000)	988	5,654	5,776	5,894	6,017
44	Average Charge	\$/MWh	4.34	4.11	4.18	4.24	4.30
	AR Power Supply and Transmission Charges						
45	AR Production and Transmission Charges	(\$000)	14,130	79,999	81,386	82,446	81,788
46	Average Charge	\$/MWh	62.07	58.17	58.91	59.30	58.48
	Charges by Rate Component						
47	Demand Charge	(\$000)	7,267	41,424	42,137	42,405	38,274
48	Base Energy Charge	(\$000)	375	2,264	2,334	2,629	5,337
49	Fuel and Purchased Energy Charge	(\$000)	5,500	30,656	31,139	31,518	32,160
50	Transmission Charge	(\$000)	988	5,654	5,776	5,894	6,017
51	Total	(\$000)	14,130	79,999	81,386	82,446	81,788

Competitive Comparison

Projected 2020 KyMEA Rates versus KU's Existing Rates

4 Main Components of Monthly Charges

Rate Component	Units	Current KU Rates FYE June 2018	Projected KyMEA AR Rates FYE June 2019/2020	
		Rate Levels	Rate Levels	% Lower Than Existing KU Rates
1. Demand Charge	\$/kW-mo.	17.18	14.73	14%
2. Non-Fuel Energy Component	\$/MWh	4.85	1.65	14%
3. Fuel and Purchased Energy Component (Including ECA)	\$/MWh	22.95	22.29	
4. LGE/KU OATT	\$/kW-mo.	1.98	AR Members would pay the same LGE/KU OATT Rates as KU wholesale customers	

Factors that Will Impact KU's Future Wholesale Rate Levels

Upward Pressure on KU's Rates

Environmental Compliance Investment and Annual Costs

Other Investment

Loss of KyMEA AR Members' Loads and Other KU Load Changes

Increases in Fuel and Other Operating Costs

2018 Tax Cuts and Jobs Act

Future KU rates will not include accelerated recovery of certain environmental compliance costs currently in the rates to AR Members

Factors Relieving Pressure on KU's Rates

Highlights, Summary and Conclusions

- 1. Purpose:** The costs and rates included in this presentation are projected using assumptions believed to be conservative. These projections were prepared to aid in the planning processes of the AR Members.
- 2. Rate Stability:** KyMEA's AR costs are projected to be such that KyMEA's demand and non-fuel energy rates are projected to be relatively stable through June 2023 (and beyond to June 2029). According, most changes in KyMEA's AR rate levels are projected to result from increases or decreases in fuel commodity costs and market prices for energy.
- 3. Updates:** The initial KyMEA AR budget and rate level will be established in late 2018 or very early 2019 based on updates to the information used in preparing these projections.
- 4. Competitive Assessment:** The projected KyMEA AR rates in this presentation are 14% below the KU wholesale rate level currently being charged to the KyMEA AR Members (existing rates applicable from July 2017 thru June 2018).

Appendix A – Supplemental Information

This information will not be reviewed during the presentation, but may be used to answer questions and provide further explanation.

Appendix A – Supplemental Information

This Appendix A provides additional information and detail in the following areas.

1. **Principal Considerations and Assumptions**
2. **Billing Demand – Historical v Projected**
3. **Initial Project Revenues**
4. **Cost Classification by Rate Component – Demand and Non-Fuel Energy**
5. **Opportunities for Market Transactions**

Principal Considerations and Assumptions

Item	Basis for Initial Budget Estimates
Load Forecast	<ul style="list-style-type: none"> ➤ September 2017 Forecast prepared by NewGen
Charges under the PPAs with BREC, Dynegy, & Paducah	<ul style="list-style-type: none"> ➤ Capacity, reservation, and non-fuel energy charges per applicable contract ➤ Projected fuel prices
Charges by NGCC (June 2022) and Solar (May 2019) Providers	<ul style="list-style-type: none"> ➤ Solar energy prices per proposal ➤ For NGCC: <ul style="list-style-type: none"> <input type="checkbox"/> Capacity and non-fuel energy charges per proposals <input type="checkbox"/> Projected fuel prices and dispatch drive fuel costs <input type="checkbox"/> Natural gas reservation charges per proposer
Salaries and Personnel Costs	<ul style="list-style-type: none"> ➤ Salary and expense budget estimates for 2018 prepared by OMU in August 2014 plus allowance for other costs and contingency ➤ Total costs allocated to AR Members, OMU, and Transmission Only Members based on energy requirements
Working capital	<ul style="list-style-type: none"> ➤ Projected costs include an allowance sufficient to amortize financing of approximately \$15-\$18 Million over 10 years ➤ Expect KyMEA will use a combination of debt and lines of credit

Principal Considerations and Assumptions (Continued)

Item	Basis for Initial Budget Estimates
<p>MISO Charges Point to Point transmission, market participation fees, and other miscellaneous charges</p>	<ul style="list-style-type: none"> ➤ Current MISO tariffs ➤ Less Credits for certain MISO charges pursuant to the De-Pancaking Agreement
<p>LGE/KU Transmission and Related Charges</p>	<ul style="list-style-type: none"> ➤ Current LGE/KU OATT charges (same costs as now paid by the AR Members) with assumed escalation ➤ LGE/KU ancillary service and imbalance charges
<p>MISO Energy Transactions</p>	<ul style="list-style-type: none"> ➤ BREC and NGCC providers will deliver energy to the MISO system on KyMEA's behalf ➤ KyMEA will receive credits from MISO for that energy based on MISO prices at the point of delivery ➤ KyMEA will purchase energy from MISO as needed to serve load at the MISO-LGEE interface ➤ Differences between the credits received from MISO and charges for energy provided by MISO will result from MISO system congestion and losses, energy purchases from MISO, or energy sales into MISO. ➤ Allowances for congestion and losses are based on planning studies and are assumed net of value of AARs/FTRs.

Principal Considerations and Assumptions (Continued)

Item	Basis for Initial Budget Estimates
Contingency and Rate Stabilization Allowances	<p>Recommendation:</p> <ul style="list-style-type: none"><input type="checkbox"/> Budget a contingency equal to at least 5% of demand and energy costs<input type="checkbox"/> Plan to deposit any net income that results to a Rate Stabilization Account for use in future periods <p>Explanation:</p> <ol style="list-style-type: none">1. Uncertainties regarding Demand Revenues and Costs<ul style="list-style-type: none"><input type="checkbox"/> Most demand costs will be established by Power Purchase Agreement (PPA) provisions. Reasonable and conservative allowances have been made for other demand costs. Therefore, there is a relatively low risk of variations in actual demand costs relative to current projections.<input type="checkbox"/> However, if billing demands prove to be 5% to 10% lower than forecast, due to weather or other factors, demand revenue would be lower than projected by approximately \$2 million to \$4 million, respectively.<input type="checkbox"/> The recommended 5% contingency allowance would provide an estimated \$3.5 million to offset variations from forecasted demand revenues and to a lesser extent variations in actual versus budgeted costs.<input type="checkbox"/> For FYE June 2020, the contingency included would essentially cover the lower demand revenue that would result if billing demands equal the lowest level that has occurred in the 5 years ended 2016, which were lower than the current forecast for 2020 by 8.9%. (See next Slide.)2. Uncertainties regarding Energy Revenues and Costs<ul style="list-style-type: none"><input type="checkbox"/> KyMEA plans to include a Energy Cost Adjustment clause in the rate schedule, which will pass-through actual fuel and other purchased energy costs.<input type="checkbox"/> This clause would significantly mitigate need for contingency for energy cost variances.

Billing Demand – Historical v Projected

The lowest total of the 12 monthly Billing Demands in the last 5 years was 8.9% below projected Billing Demand levels for 2020. – The proposed contingency would essentially cover this level of shortfall in billing demands.

			2019 (2 months)	2020	2021	2022	2023
Projected Member Billing Determinants							
1	Member NCP Demand	MW-mos.	493	2,813	2,831	2,846	2,863
2	Member Energy	GWh	228	1,375	1,382	1,390	1,399
3	Load Factor	%	63.0%	67.0%	66.9%	66.9%	66.9%
Historical 5-Year Member Billing Determinants				Lowest	Average	Highest	
4	Member NCP Demand	MW-mos.		2,563	2,673	2,746	
5	Member Energy	GWh		1,312	1,330	1,342	
6	Load Factor	%		70.1%	68.2%	66.9%	
Amount by which Historical Levels on Line 4 are Less than Projected Level for 2020 on Line 1							
7	Historical Below Projected	MW-mos.		(250)	(140)	(67)	
8	Total Growth over Period	%		(8.9%)	(5.0%)	(2.4%)	

Cost Classification by Rate Component

Item	Basis for Initial Rate Level Analysis
<p>Classification of Costs as to:</p> <ul style="list-style-type: none"> ➤ Production - Demand ➤ Production - Non-Fuel Energy ➤ Production - Fuel/Purchases ➤ Transmission <p>Decisions in this area impact the extent to which the competitive position of the Members relative to KU are proportionate.</p> <ul style="list-style-type: none"> ➤ Classification decisions can change the tilt of the rate between demand and energy charges. 	<ul style="list-style-type: none"> ➤ Typical classification for most production costs based on FERC's Predominance Method <ul style="list-style-type: none"> <input type="checkbox"/> Demand <input type="checkbox"/> Energy ➤ Contingency and Rate stabilization <ul style="list-style-type: none"> <input type="checkbox"/> 75% Demand/25% Non-Fuel Energy ➤ Only LGE/KU NITS and Schedule 1 charges classified as Transmission ➤ MISO transmission and fees and other LGEE ancillary charges classified as either Production Demand or Energy, depending on the nature of the cost.

Initial Projected Revenues - FYE June 2019 thru 2023 (Accrual Basis)

(Revenue from Sales to Others and Directly Assigned Charges has not been included in these projections.)

			2019	2020	2021	2022	2023
			(2 months)				
	AR Project Revenues						
1	Sales to AR Members	(\$000)	14,130	79,999	81,386	82,446	81,788
2	Sales to Others	(\$000)	-	-	-	-	-
3	Directly Assigned Charges (Delivery facilities, Metering, Falmouth transmission)	(\$000)	-	-	-	-	-
4	Total	(\$000)	14,130	79,999	81,386	82,446	81,788

Classification of Costs – Fixed Costs for Demand Rate FYE June 2019 thru 2023

			2019	2020	2021	2022	2023
	Demand Costs		(2 months)				
21	Purchased Power	(\$000)	3,752	34,083	34,683	34,842	30,616
22	MISO/LGEE Ancillary Charges	(\$000)	172	989	1,009	1,042	1,207
23	P&I and LOC Fees for Working Capital	(\$000)	348	2,085	2,085	2,085	2,085
24	KyMEA Administration Costs	(\$000)	142	881	907	934	962
25	Scheduling and Dispatch	(\$000)	105	650	669	689	710
26	Contingency/Rate Stabilization Deposits	(\$000)	2,748	2,737	2,784	2,812	2,694
27	Subtotal - Demand Costs	(\$000)	7,267	41,424	42,137	42,405	38,274
28		\$/kW-mo.	14.73	14.73	14.88	14.90	13.37

Classification of Costs – Fuel and Non-Fuel Energy Costs FYE June 2019 thru 2023

			2019	2020	2021	2022	2023
	Non-Fuel Energy Costs						
31	Purchased Power – Variable O&M	(\$000)	229	866	910	1,156	3,577
32	MISO/LGEE Charges	(\$000)	55	302	306	328	525
33	KyMEA Administration Costs	(\$000)	47	294	302	311	321
34	Contingency/Rate Stabilization Deposits	(\$000)	44	803	816	833	915
35	Subtotal - Base Energy Costs	(\$000)	375	2,264	2,334	2,629	5,337
36		\$/MWh	1.65	1.65	1.69	1.89	3.82
	Fuel and Purchased Energy Costs						
37	Purchased Power - Fuel	(\$000)	3,273	23,248	23,748	23,976	24,238
38	Purchased Power - SEPA, Solar, Market	(\$000)	2,174	7,202	7,178	7,356	7,858
39	Purchased Power - Emissions	(\$000)	53	206	212	186	64
40	Contingency/Rate Stabilization Deposits	(\$000)	-	-	-	-	-
41	Subtotal -Fuel and Purchased Energy	(\$000)	5,500	30,656	31,139	31,518	32,160
42		\$/MWh	24.16	22.29	22.54	22.67	22.99

Opportunities for Market Transactions – Sales to Others and Purchases of Energy in Lieu of Using KyMEA’s Resources

1. **Sales to Others** - KyMEA is positioned to make sales to parties other than the AR Members primarily from coal and natural gas combined cycle capacity resources in the AR Members’ portfolio. Sales to others may be made by KyMEA in at least the following ways:
 - Dispatch of energy from KyMEA’s resources into MISO’s day-ahead and real-time energy markets in excess of the energy amounts scheduled to be delivered from MISO to the LGE/KU system to serve KyMEA’s loads;
 - Sales of energy to other KyMEA Members under pooling-type of arrangements; or
 - Sales under bi-lateral contracts with other parties.

2. **Purchases of More Economical Energy** - KyMEA is also positioned to purchase energy from the market or other parties instead of using energy available from KyMEA’s long-term bi-lateral contracts, when doing so would lower its costs. Purchases from others would be made by KyMEA in at least the following ways.
 - Dispatch of energy from KyMEA’s resources into MISO’s day-ahead and real-time energy markets in amounts lower than the energy amounts scheduled to be delivered from MISO to the LGE/KU system to serve KyMEA’s loads; or
 - Purchases of energy from other KyMEA Members under pooling-type of arrangements.

Opportunities for Market Transactions – Sales to Others and Purchases in Lieu of Using KyMEA’s Resources

1. Based on current analyses, the projected benefits to the AR Members of KyMEA from sales of energy to the MISO market and purchases of more economical energy from the MISO market in certain hours of the year range from \$2 million to \$4 million per year.

- The projections are based on historical, and current forecasts of, MISO market energy prices (hourly price curves) and fuel prices for KyMEA’s AR resources.
- Based on current load forecasts, KyMEA may also have the opportunity to make sales of capacity from June 2019 through May 2022. The opportunity to make capacity sales may result in additional benefits to KyMEA.

2. Managing benefits of market sale and purchase transactions

- The AR portfolio was developed to position KyMEA to make sales to and purchases from others when market prices and other conditions present opportunities, but not relying on those transactions to achieve economic goals of the AR Members;
- Projections of benefits of the KyMEA power supply arrangement to the AR Members presented in Summer 2016 and the AR cost projections shown in this presentation have conservatively ignored projections of benefits of economy market transactions; and
- Actual benefits from market transactions will be volatile due to the complexity of market dynamics. To allow KyMEA’s AR Rates to be more stable and predictable for the AR Members, we recommend:
 - ❑ AR rate levels be set without “counting” on projected margins on market transactions; and
 - ❑ The Energy Cost Adjustment clause portion of KyMEA’s AR rate schedule be designed so margins on market sale and purchase energy transactions would be used each year to offset other contingencies that may occur and the net remaining would be transferred to a rate stabilization account for use in future periods.