



**Rutherford Electric  
Membership Corporation**

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OFFICIAL COPY

August 16, 2011

FILED  
AUG 31 2011

Clerk's Office  
N.C. Utilities Commission

Renné Vance, Chief Clerk  
North Carolina Utilities Commission  
430 N. Salisbury Street  
Dobbs Building  
Raleigh, North Carolina 27603-5918

Re: Rutherford EMC – 2011 Integrated Resource Plan

Dear Ms. Vance:

Pursuant to Rule R8-60 of the North Carolina Utilities Commission's Rules and Regulations, Rutherford EMC hereby provides for filing an original and thirty (30) copies of our 2011 Integrated Resource Plan. Also included is the required certification document.

If you have any questions, please do not hesitate to contact me at 828.245.1621.

Sincerely,

Joseph H. Joplin  
General Manager

cc: Giselle Rankin, NCUC

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CERTIFICATION

I hereby certify that the data included in this report was taken from the books and records of the reporting company and is true and correct to the best of my knowledge.

SIGNATURE OF CERTIFYING PERSON Joseph H. Joplin

NAME OF CERTIFYING PERSON (Type or Print) Joseph H. Joplin

Title of Certifying Person General Manager, Rutherford EMC

NOTARIZATION

Sworn to and subscribed to me  
this 16 day of August, 2011.

Alyvia L. Hedin  
Notary Public

My Commission expires: July 10, 2013

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**2011  
NCUC Integrated Resource Plan**

**FILED**  
**AUG 31 2011**  
Clerk's Office  
N.C. Utilities Commission



® Rutherford Electric  
Membership Corporation

North Carolina Utilities Commission  
September 1, 2011

## **Executive Summary**

This document represents Rutherford EMC's Integrated Resource Plan filed with the North Carolina Utilities Commission ("NCUC") in response to R8-60 of the NCUC Rules and Regulations. This plan includes a forecast of loads and resources to meet Rutherford's power supply needs over the next fifteen years.

Under Rutherford EMC's Wholesale Power Supply Agreement ("WPSA") with North Carolina Electric Membership Corporation ("NCEMC"), NCEMC is obligated to supply Rutherford with electric power and energy from its existing contract and generation resources. To the extent that the electric power and energy supplied under the WPSA is not sufficient to meet the electric energy requirements of its member/consumers, Rutherford must independently arrange for purchases of electric power and energy from a third party.

In December 2003, Rutherford EMC entered into a Power Purchase Agreement with Morgan Stanley Capital Group, Inc. ("MSCG") that was effective January 1, 2004. As a result of an RFP process in 2005, Rutherford EMC signed an additional long-term agreement with Duke Power Company, LLC (d/b/a Duke Energy Carolinas, LLC) that became effective September 1, 2006. The initial term of this agreement is through December 31, 2021 with an automatic extension mechanism that allows the agreement to extend for additional 10 year periods. The agreement with MSCG terminated on December 31, 2010. As a result, Rutherford's load previously served by MSCG is now served by Duke Energy under the current agreement. Therefore, it is planned that the purchases from NCEMC, SEPA and Duke Energy will continue to meet the power supply needs of Rutherford EMC through the planning period.

Rutherford EMC is a transmission dependent utility and relies on the transmission system of Duke Energy to transfer power purchases to their loads. Rutherford EMC receives Network Integration Transmission Service under Part III of the Open Access Transmission Tariff with Duke Transmission.

The following is Rutherford EMC's response to the requested data as outlined in NCUC's Rule R8-60:

### **Section I: Rutherford EMC Integrated Resource Plan**

#### **I. Forecasts of Load, Supply-Side Resources, and Demand-Side Resources**

Rutherford EMC employs TSE Services to develop their annual load forecast. TSE is responsible for the coordination of the forecasting effort including consumer research, energy and demand forecasting, and weather data analysis. The load forecast is reviewed by Rutherford and the input from their staff is used to revise the forecast if necessary.

Customers, energy and demand are forecasts on a monthly basis. The customer forecast and the energy sales forecast are completed for each retail class listed on the RUS Form 7. The system monthly energy is the sum of the retail class energy sales adjusted for losses.

Residential and commercial customers are forecast using regression analysis. This forecast of customers by retail class is then utilized in developing the energy forecast. For both the residential and commercial energy forecasts, the forecast of customer *growth of each class is multiplied by the forecast of average energy consumption per customer* for that class, under the assumption of normal weather. Industrial customers are modeled on an individual basis. The demand forecast is developed similarly to the energy forecast by multiplying the number of customers and an average hourly demand per customer.

(i) Customers by Class:

Table 1.1 provides a ten year history and a fifteen year forecast of Rutherford EMC's customers by each customer class, along with a ten year history and a fifteen year forecast of the energy sales (MWH) by each customer class.

(ii) Forecast of Peak Loads and Energy Requirements:

Table 1.2 and Table 1.3 provide a fifteen year forecast of Rutherford EMC's peak load requirements and resources for both the summer and winter periods and energy requirements from 2012 through 2026. Following these tables are the load duration curves for Rutherford EMC for 2012 and 2026.

**Table 1.1: Rutherford EMC Historical and Forecast Customers by Class and Energy Sales by Class**

**Customers By Class**

Historical	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Residential	56,937	57,635	58,332	59,026	59,877	60,964	61,494	61,470	61,083	61,706
Seasonal	943	968	1,012	1,098	1,120	1,161	1,186	1,212	1,229	1,258
Commercial	3,636	3,738	3,816	3,876	4,006	4,003	4,087	4,131	4,765	4,851
Industrial	22	24	24	26	27	30	32	34	36	36
Other	65	71	75	75	81	185	190	189	190	192
<b>Total</b>	<b>61,603</b>	<b>62,436</b>	<b>63,259</b>	<b>64,101</b>	<b>65,111</b>	<b>66,343</b>	<b>66,989</b>	<b>67,036</b>	<b>67,303</b>	<b>68,043</b>

Forecast	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Residential	62,335	62,971	63,614	64,262	64,918	65,580	66,249	66,925	67,607	68,297	68,994	69,697	70,408	71,126	71,852
Seasonal	1,286	1,322	1,360	1,397	1,436	1,478	1,522	1,569	1,617	1,666	1,715	1,764	1,814	1,864	1,915
Commercial	4,938	5,027	5,117	5,210	5,303	5,399	5,496	5,595	5,696	5,798	5,903	6,009	6,117	6,227	6,339
Industrial	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
Other	194	196	198	200	202	204	206	208	210	212	214	216	218	220	222
<b>Total</b>	<b>68,789</b>	<b>69,552</b>	<b>70,325</b>	<b>71,105</b>	<b>71,895</b>	<b>72,697</b>	<b>73,509</b>	<b>74,333</b>	<b>75,166</b>	<b>76,009</b>	<b>76,862</b>	<b>77,722</b>	<b>78,593</b>	<b>79,473</b>	<b>80,364</b>

**Energy Sales (MWH) by Class**

Historical	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Residential	805,082	791,393	829,274	841,632	833,490	871,656	873,467	871,531	962,335	887,765
Seasonal	3,293	3,162	3,340	3,684	3,745	3,909	4,144	4,239	4,802	4,570
Commercial	109,788	106,748	117,115	120,586	125,492	132,253	128,924	122,262	139,890	144,511
Industrial	129,411	135,776	149,338	151,613	153,653	152,923	153,739	143,390	149,277	153,124
Other	995	1,806	3,387	1,993	1,674	2,352	3,401	3,594	3,917	3,793
<b>Total</b>	<b>1,048,569</b>	<b>1,038,885</b>	<b>1,102,454</b>	<b>1,119,508</b>	<b>1,118,054</b>	<b>1,163,094</b>	<b>1,163,675</b>	<b>1,145,015</b>	<b>1,260,221</b>	<b>1,193,763</b>

Forecast	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Residential	898,294	907,459	916,715	926,061	935,509	945,052	954,691	964,428	974,265	984,204	994,242	1,004,383	1,014,626	1,024,976	1,035,433
Seasonal	4,661	4,784	4,920	5,058	5,197	5,347	5,503	5,668	5,846	6,023	6,202	6,383	6,565	6,746	6,933
Commercial	146,250	148,885	151,560	154,291	157,066	159,898	162,774	165,703	168,686	171,724	174,815	177,960	181,173	184,425	187,744
Industrial	153,124	153,124	153,124	153,124	153,124	153,124	153,124	153,124	153,124	153,124	153,124	153,124	153,124	153,124	153,124
Other	3,833	3,874	3,914	3,954	3,995	4,035	4,076	4,116	4,156	4,197	4,237	4,277	4,318	4,358	4,398
<b>Total</b>	<b>1,206,162</b>	<b>1,218,125</b>	<b>1,230,233</b>	<b>1,242,488</b>	<b>1,254,891</b>	<b>1,267,456</b>	<b>1,280,168</b>	<b>1,293,039</b>	<b>1,306,077</b>	<b>1,319,272</b>	<b>1,332,620</b>	<b>1,346,127</b>	<b>1,359,806</b>	<b>1,373,629</b>	<b>1,387,632</b>

**Table 1.2: Rutherford EMC Projected Summer Peak Load, Resources and Annual Energy (2011 Load Forecast)**

Rutherford EMC															
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
<b>Load Requirements:</b>															
<b>PEAK (MW) (1)</b>	301	312	324	336	348	362	375	390	405	421	437	454	471	489	508
<b>Purchased Resources: (2)</b>															
NCEMC WPSA	84	57	57	47	47	47	47	47	47	47	47	47	47	47	47
SEPA	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Duke Energy Purchases (3)	193	231	243	265	277	291	304	319	334	350	366	383	400	418	437
<b>TOTAL RESOURCES (MW)</b>	301	312	324	336	348	362	375	390	405	421	437	454	471	489	508
<b>RESERVE CAPACITY (MW) (2)</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>ANNUAL ENERGY (GWh) (4)</b>	1,328	1,341	1,355	1,368	1,382	1,396	1,410	1,424	1,438	1,453	1,467	1,482	1,497	1,513	1,528

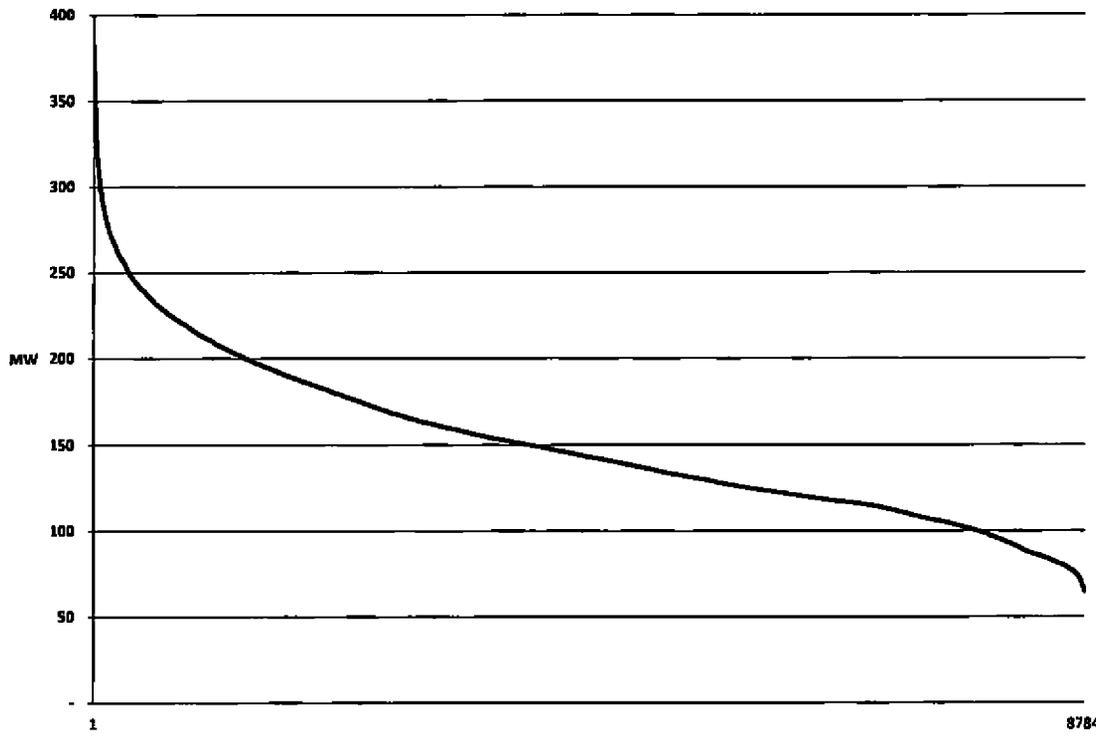
1. Peak is Rutherford's peak measured at generation.
2. All purchases are 100% firm with reserves provided by the supplying entity.
3. The initial term of the purchase with Duke Energy is thru December 31, 2021 with an automatic extension mechanism that allows the agreement to extend for additional 10 year periods.  
All current and future resources provided by Duke Energy are firm; the Duke Energy purchase is a network resource recognized by Duke Transmission.  
Resources provided by Duke Energy will come from resources in the Duke control area or through imports made with firm transmission.  
Duke Energy has operational control of Rutherford's demand-side programs, therefore the MWs associated with these programs are considered a Duke Energy resource.
4. Energy values are measured at generation.

**Table 1.3: Rutherford EMC Projected Winter Peak Load, Resources and Annual Energy (2011 Load Forecast)**

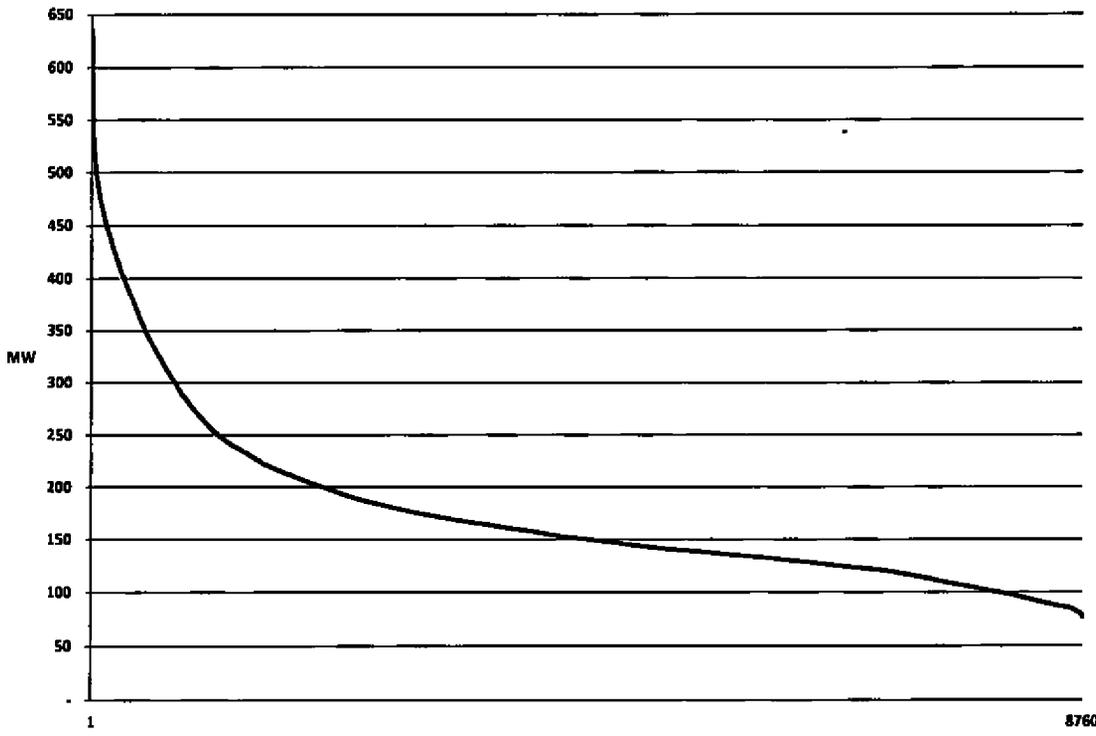
Rutherford EMC	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
<b>Load Requirements:</b>															
<b>PEAK (MW) (1)</b>	382	396	411	426	442	458	475	493	511	530	550	570	591	613	636
<b>Purchased Resources: (2)</b>															
NCEMC WPSA	84	57	57	47	47	47	47	47	47	47	47	47	47	47	47
SEPA	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Duke Energy Purchases (3)	274	315	330	355	371	387	404	422	440	459	479	499	520	542	565
<b>TOTAL RESOURCES (MW)</b>	382	396	411	426	442	458	475	493	511	530	550	570	591	613	636
<b>RESERVE CAPACITY (MW) (2)</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>ANNUAL ENERGY (GWh) (4)</b>	1,328	1,341	1,355	1,368	1,382	1,396	1,410	1,424	1,438	1,453	1,467	1,482	1,497	1,513	1,528

1. Peak is Rutherford's peak measured at generation.
2. All purchases are 100% firm with reserves provided by the supplying entity.
3. The initial term of the purchase with Duke Energy is thru December 31, 2021 with an automatic extension mechanism that allows the agreement to extend for additional 10 year periods.  
All current and future resources provided by Duke Energy are firm; the Duke Energy purchase is a network resource recognized by Duke Transmission.  
Resources provided by Duke Energy will come from resources in the Duke control area or through imports made with firm transmission.  
Duke Energy has operational control of Rutherford's demand-side programs, therefore the MWs associated with these programs are considered a Duke Energy resource.
4. Energy values are measured at generation.

Rutherford EMC  
2012 Load Duration Curve



Rutherford EMC  
2026 Load Duration Curve



(iii) Future supply-side resources:

Under the power supply agreement with Duke Energy, Duke Energy will plan, procure and provide electric capacity and energy to meet the future incremental power supply needs of Rutherford EMC, above their existing purchase power contracts.

**2. Generating Facilities**

(i) Existing Generation:

Rutherford does not own any generating plants.

(ii) Planned Generation Additions:

Rutherford does not have plans to purchase or construct electric generating facilities.

(iii) Non-Utility Generation:

On Rutherford's system there are 9 – 1500 KVA diesel units at the Baxter-Travenol Plant in North Cove, NC (McDowell County). These diesel units have 13,500 KW of generation that is for peaking only and controlled by Rutherford EMC when requested by Duke Energy. Duke Energy has requested operation of this generation 4 times since August 1, 2005 twice during the summer of 2007 and twice in the summer of 2011. Operation is limited to at most 200 hours per year because of emission limitations. This generation is treated as a demand side resource and is thus not included in the EMC's list of power supply resources.

Renewable generation is also active on Rutherford EMC's system with ten producers currently totaling 45.5 kW. Two more units of a total 15 kW will be on line by the end of 2011. This generation is treated as a demand side resource and is thus not included in the EMC's list of power supply resources.

In 2011, Rutherford EMC completed interconnection with a landfill gas generator for 4.5 MW of capacity with potential for 1.5 MW of additional capacity in 2013. The energy is purchased by Duke Energy and Duke receives the RECs associated with this resource. Since the energy is purchased directly by Duke, this resource is not included in the EMC's list of power supply resources.

Facility Name	Location	Primary Fuel Type	Capacity	Designation
Baxter-Travenol	North Cove, NC - McDowell County	Diesel	13,500 kW	Peaking
Bennett	Rutherford County	Solar PV	3 kW	Peaking
Dunford	McDowell County	Solar PV	4.95 kW	Peaking
Helms	Gaston County	Solar PV	0.7 kW	Peaking
Bowling	Gaston County	Solar PV	6.5 kW	Peaking
Cole	Gaston County	Solar PV	4 kW	Peaking
Fretwell	Polk County	Solar PV	2.9 kW	Peaking
Genett	Lincoln County	Solar PV	2.5 kW	Peaking
Hovis	Gaston County	Solar PV	4.9 kW	Peaking
Andrews	Burke County	Solar PV	10 kW	Peaking
Russ	McDowell County	Solar PV	6 kW	Peaking
Gaston County Landfill	Dallas, NC - Gaston County	Landfill Gas-Methane	4,500 kW	Base

### 3. Reserve Margins

As indicated in Tables 1.2 and 1.3, the wholesale purchase power contracts between Rutherford EMC and NCEMC, SEPA and Duke Energy are 100% firm with all reserves provided by each of the supplying entities.

### 4. Wholesale Contracts for the Purchase and Sale of Power

#### (i) Wholesale Purchased Power Contracts:

	Primary Fuel Type	Capacity (MW)	Designation	Location	Expiration Date
NCEMC WPSA	System Purchase	See Table 1.2 and 1.3	Base/Intermediate	Duke Control Area	2045
SEPA	Hydro	24	Base/Peaking	Duke Control Area	
Duke Energy Carolinas, LLC	System Purchase	See Table 1.2 and 1.3	Base/Inter/Peaking	Duke Control Area	2021**

\*\*Contract has an automatic extension mechanism that allows the agreement to extend for additional 10 year periods

#### (ii) Results of Request For Proposals:

Under the power supply agreement with Duke Energy, Duke Energy will plan, procure and provide electric capacity and energy to meet the future incremental power supply needs of Rutherford EMC, above their existing purchase power contracts.

#### (iii) Wholesale Power Sales Contracts:

Rutherford EMC does not have any wholesale power sales contracts.

### 5. Transmission Facilities

Rutherford EMC does not have any transmission lines or associated facilities that are 161 kV or over.

### 6. Demand-Side Management

#### (i) Existing Programs:

Rutherford EMC has 13.5 MW of controllable, customer-owned generation that is for peaking only and controlled by Rutherford EMC when requested by Duke Energy. Duke Energy has requested operation of this generation 4 times since August 1, 2005 twice during the summer of 2007 and twice in the summer of 2011. (See 2. (iii)) This resource is only utilized when Duke Energy is experiencing energy shortages.

Rutherford has 9 accounts on Time-of-Use Rates to provide incentives to consumers to shift electricity demand from peak to nonpeak periods. These 9 accounts are small electric users and consist of 4 golf course accounts, 1 radio

station account, 1 cable TV station account, 1 chicken house account, 1 sewer plant, and 1 flea market.

Rutherford EMC has load management switches to control 7,934 air conditioners and 12,821 water heaters capable of immediate demand reductions of 7.5 MW as verified. The air conditioners were tested in August 2009 and 2011 and exceeded Duke Energy's reduction requirements for controllable air conditioners at the tested temperature. Under the existing contract, Duke Energy can request Rutherford EMC to control the air conditioners based on system conditions. These switches were utilized during the summer of 2011.

Control of electric water heaters have been discontinued as of February 1, 2008 since the incentives from Duke Energy were cancelled. The water heaters would only be used if requested by Duke Energy when experiencing an energy shortage. These were not used under the existing Duke Energy contract prior to canceling incentives. Rutherford still can use these water heater switches as a reduced incentive has been paid to members to keep controlling as an optional Rutherford EMC resource.

(ii) Proposed Programs:

Renewable generation is active on Rutherford EMC's system with ten producers currently and two more expected on line by the end of 2011. Rutherford EMC has completed a complete interconnection plan for all renewable generation up to 10 MW. Information requests for generation smaller than 50 kW are received weekly, and for systems larger than 50 kW are received quarterly.

(iii) Evaluated but Rejected Programs:

None

(iv) Consumer Education Programs:

Rutherford EMC is committed to promoting electrical efficiency. To promote the concept of efficiency, Rutherford EMC provided 805 members with three compact fluorescent light bulbs at an annual meeting in 2007. Rutherford has given out a total of 9,000 of the 13W compact fluorescent light bulbs. These 13W bulbs were to replace 60W bulbs (total reduction of 423 kW).

Rutherford has recently purchased 9000 additional CFL bulbs for the October 2011 annual meeting. Each attending member will be given 3 CFL's with the balance being given to Rutherford EMC members that are visited by our Member Service Representatives with energy concerns over the following months. The purchase CFL's are 14 watts and are equivalent of a 60 watt bulb.

In an effort to promote consumer education, Rutherford EMC has a new Web based Energy Portal that is available to all Rutherford's residential consumers. Rutherford EMC recently fully deployed an Automated Meter Reading Infrastructure (AMI) system to provide 2 way communications to all

meters primarily to collect daily meter readings electronically. Deployment of the AMI system began in 2005 and was totally deployed in 2008. In spring of 2010, Rutherford added web based software allowing residential consumers to view daily energy usages, get daily E-mails and texts of energy usages, and to get budget alarms if energy usage exceeded member's budget threshold (through the internet and cell phones). This tool allows members to instantly know their daily usages allowing them the opportunity to know what is driving their energy usage and to make changes if any to reduce their daily usage. The link to the Energy Portal is available on Rutherford's web page and is member controlled through set-up criteria and passwords. This energy portal site has been accessed on average 40 times each week.

The following table outlines the consumer usage at this time.

<b>Energy Usage Portal</b>	<b># Users</b>
Registered Users Total:	245
Set Up for Regular Notifications:	
Daily Usage Text	14
Daily Usage Email	82
Weekly Usage Text	14
Weekly Usage Email	99
Monthly Usage Text	15
Monthly Usage Email	105
Set Up for Budget Threshold Alerts:	
Budget Text	11
Budget Email	38
Set Up for My actual energy cost is x% of my energy budget:	
Budget Alert 1	40
Set Up for My projected monthly energy cost is \$x over my energy budget:	
Budget Alert 2	42
Email Addresses Provided:	239
Text Phone Numbers Provided:	43

## **7. Assessment of Alternative Supply-Side Energy Resources**

Under the power supply agreement with Duke Energy, Duke Energy will plan, procure and provide electric capacity and energy to meet the future incremental power supply needs of Rutherford EMC, above their existing purchase power contracts.

## **8. Evaluation of Resource Options**

Under the power supply agreement with Duke Energy, Duke Energy will plan, procure and provide electric capacity and energy to meet the future incremental power supply needs of Rutherford EMC, above their existing purchase power contracts. Therefore, all resource decisions will be made by Duke Energy, including the impact of potential legislation regarding carbon and other emissions on those resource decisions.

### **Section II: Rutherford EMC's Short Term Action Plan**

No action required. Rutherford EMC's purchases from NCEMC, SEPA and Duke Energy will continue to meet the power supply needs of Rutherford EMC during the short term and throughout the planning period.

### **Section III: Rutherford EMC's REPS Compliance Plan**

As part of Duke Energy's portfolio of resources, Duke Energy provides services including delivery of renewable energy resources to certain wholesale customers to meet the REPS requirements. These wholesale customers – including electric membership corporations ("EMCs") and municipalities – may rely on Duke Energy to provide this renewable energy delivery service in accordance with N.C. Gen. Stat. § 62-133.8(c)(2)e. As part of the long term agreement with Rutherford EMC, Duke Energy has agreed to provide information and timely file any reports applicable to Rutherford EMC which are required to comply with the REPS or any rules and regulations promulgated thereunder. Duke Energy will include Rutherford's load in Duke Energy's filing for reporting purposes when filing their Integrated Resource Plan, pursuant to Rule R8-60, in accordance with the filing schedule approved by the NCUC. Duke Energy will also reflect Rutherford's REPS Obligation in Duke Energy's REPS compliance plan filed with the NCUC, pursuant to Rule R8-67.