

B. Collections of Information Employing Statistical Methods

1. To collect this information, TVA employs telephone, online, and mail surveys of residential households and businesses residing in the service area of one of the 155 Local Power Companies (LPCs) that purchase power from TVA. This survey is conducted as an independent measure of indirect program impact, effectiveness of communication efforts, evolving household demographics, program administration, changes in the saturation of non-electric fuels, potential interest in energy efficiency, drivers of energy efficiency, and changes in saturation of electrical equipment. This information is not available from other public sources and must be gathered by TVA. The results of this survey aid groups such as TVA's Enterprise Planning as well as Products and Services managers in assessing the effectiveness of TVA's energy efficiency and demand response programs, planning improvements to existing programs, and designing new programs. Local Power Company' staffs also use these results to determine ways to better meet the needs of their residential and commercial customers.

The respondent universe is comprised of households and businesses residing in the TVA service area. From this universe, sample sizes are calculated based on each LPCs total customer base and the proportion of overall TVA service area (Valley) customer base represented. TVA has developed a three tiered approach to ensure that each LPCs survey sample size is sufficient for minimal analysis and based on customers served. More information on this approach can be found in **Section B.2**.

Samples sizes are calculated to ensure representation with a minimum sample size of 30 for each LPC. Local Power Company samples are summed to the seven TVA geographically dispersed District levels. The total sample is designed to attain a margin of error less than 2 percent at the 95 percent confidence level for the overall TVA service area. With sufficient sample sizes, statistical analysis can be completed down to the individual LPC service area. Results are summarized down to the LPC level; however, in most cases, TVA recommends using District or TVA level results when making substantive decisions from the data. **Table 1** contains the overall framework using this sampling method.

2012 RESIDENTIAL SATURATION MARGIN OF ERROR SUMMARY

District	LPC #	Distributor	2012 Residential Customers	2012 Sample	2012 Margin of Error
Alabama	6	Albertville Municipal Utilities Board	8,436	18	23%
Alabama	12	Athens Utilities (AL)	34,227	130	9%
Alabama	23	Bessemer Electric Service	12,925	39	16%
Alabama	54	Courtland Electric Department	652	-	N/A
Alabama	56	Cullman Power Board	6,455	19	23%
Alabama	61	Decatur Utilities	22,483	70	12%
Alabama	72	Florence Utilities	39,783	109	9%
Alabama	76	Fort Payne Improvement Authority	6,234	16	25%
Alabama	82	Guntersville Electric Board	4,721	18	23%
Alabama	88	Hartselle Utilities	4,311	19	23%
Alabama	99	Huntsville Utilities	150,081	579	4%
Alabama	155	Muscle Shoals Electric Board	5,947	19	23%
Alabama	192	Russellville Electric Board (AL)	3,962	8	35%
Alabama	195	Scottsboro Electric Power Board	6,782	17	24%
Alabama	201	Sheffield Utilities	15,254	26	19%
Alabama	220	Tarrant Electric Department	2,549	5	44%
Alabama	229	Tuscumbia Electricity Department	3,825	8	35%
Alabama	274	Arab Electric Cooperative	12,196	47	14%
Alabama	282	Cherokee Electric Cooperative	17,509	45	15%
Alabama	285	Cullman Electric Cooperative	34,520	86	11%
Alabama	301	Franklin Electric Cooperative	6,587	7	37%
Alabama	312	Joe Wheeler Electric Membership Corporation	34,457	73	12%
Alabama	317	Marshall-DeKalb Electric Cooperative	14,561	34	17%
Alabama	330	North Alabama Electric Cooperative	13,562	41	15%
Alabama	351	Sand Mountain Electric Cooperative	24,988	49	14%
Alabama District Totals			487,007	1482	3.30%

District	LPC #	Distributor	2012 Residential Customers	2012 Sample	2012 Margin of Error
Kentucky	19	Benton Electric System	1,874	4	49%
Kentucky	29	Bowling Green Municipal Utilities	23,253	63	12%
Kentucky	77	Franklin Electric Plant Board	3,773	13	27%
Kentucky	78	Fulton Electric System	1,340	5	44%
Kentucky	80	Glasgow Electric Plant Board	5,324	21	21%
Kentucky	91	Hickman Electric System	913	3	57%
Kentucky	95	Hopkinsville Electric System	10,375	26	19%
Kentucky	133	Mayfield Electric & Water Systems	4,627	9	33%
Kentucky	153	Murray Electric System	6,365	22	21%
Kentucky	194	Russellville Electric Plant Board (KY)	3,187	5	44%
Kentucky	306	Hickman-Fulton Counties Rural Electric Cooperative Corporation	2,823	4	49%
Kentucky	337	Pennyrile Rural Electric Corporation	37,660	130	9%
Kentucky	374	Tri-County Electric Membership Corporation	40,739	110	9%
Kentucky	383	Warren Rural Electric Cooperative Corporation	50,064	165	8%
Kentucky	385	West Kentucky Rural Electric Corporation	30,426	94	10%
Kentucky District Totals			222,743	674	4.40%

District	LPC #	Distributor	2012 Residential Customers	2012 Sample	2012 Margin of Error
Middle TN	40	Clarksville Department of Electricity	54,019	202	7%
Middle TN	49	Columbia Power & Water Systems	20,976	65	12%
Middle TN	53	Cookeville Electric Department	13,362	40	16%
Middle TN	62	Dickson Electric System	27,811	45	15%
Middle TN	70	Fayetteville Public Utilities	15,337	40	16%
Middle TN	79	Gallatin Department of Electricity	13,166	39	16%
Middle TN	111	Lawrenceburg Utility Systems	16,768	42	15%
Middle TN	117	Lewisburg Electric System	4,400	11	30%
Middle TN	135	McMinnville Electric System	6,144	11	30%
Middle TN	146	Mount Pleasant Power System	3,145	3	57%
Middle TN	149	Murfreesboro Electric Department	45,600	83	11%
Middle TN	158	Nashville Electric Service	322,010	547	4%
Middle TN	182	Pulaski Electric System	11,564	38	16%
Middle TN	206	Shelbyville Power System	8,179	7	37%
Middle TN	208	Smithville Electric System	2,029	2	69%
Middle TN	211	Sparta Electric Department	2,141	4	49%
Middle TN	212	Springfield Electric	6,892	8	35%
Middle TN	224	Tulahoma Utilities Board	8,474	36	16%
Middle TN	241	Winchester Utilities	4,583	13	27%
Middle TN	278	Caney Fork Electric Cooperative, Inc.	26,704	48	14%
Middle TN	288	Cumberland Electric Membership Corporation	77,509	158	8%
Middle TN	291	Duck River Electric Membership Corporation	60,393	135	8%
Middle TN	318	Meriwether Lewis Electric Corporation	28,980	40	16%
Middle TN	321	Middle Tennessee Electric Membership Corporation	161,958	382	5%
Middle TN	363	Tennessee Valley Electric Cooperative	15,797	32	17%
Middle TN	380	Upper Cumberland Electric Membership Corporation	40,354	117	9%
Middle TN District Totals			998,295	2148	2.40%

District	LPC #	Distributor	2012 Residential Customers	2012 Sample	2012 Margin of Error
Mississippi	3	Aberdeen Electric Department, City of	2,782	5	44%
Mississippi	9	Amory Utilities, City of	3,086	8	35%
Mississippi	52	Columbus Light and Water Department	9,560	19	23%
Mississippi	93	Holly Springs Utility Department	8,636	22	21%
Mississippi	126	Louisville Utilities	2,664	4	49%
Mississippi	129	Macon Electric Department, City of	961	-	N/A
Mississippi	161	New Albany Light, Gas & Water, City of	7,888	20	22%
Mississippi	170	Okolona Electric Department, City of	4,126	10	31%
Mississippi	172	Oxford Electric Department, City of	6,100	23	21%
Mississippi	178	Philadelphia Utilities	2,943	4	49%
Mississippi	214	Starkville Electric Department	10,223	46	14%
Mississippi	226	Tupelo Water & Light Department, City of	10,863	31	18%
Mississippi	232	Water Valley Electric Department, City of	1,574	10	31%
Mississippi	238	West Point Electric System, City of	3,264	6	40%
Mississippi	270	Alcorn County Electric Power Association	14,464	26	19%
Mississippi	279	Central Electric Power Association	29,291	42	15%
Mississippi	293	East Mississippi Electric Power Association	31,830	14	26%
Mississippi	300	4-County Electric Power Association	37,231	63	12%
Mississippi	324	Monroe County Electric Power Association	8,755	20	22%
Mississippi	327	Natchez Trace Electric Power Association	12,491	16	25%
Mississippi	331	Northcentral Mississippi Electric Power Association	23,407	103	10%
Mississippi	333	North East Mississippi Electric Power Association	18,727	53	14%
Mississippi	345	Pontotoc Electric Power Association	14,836	28	19%
Mississippi	348	Prentiss County Electric Power Association	10,784	14	26%
Mississippi	360	Tallahatchie Valley Electric Power	21,539	26	19%
Mississippi	366	Tippah Electric Power Association	10,336	14	26%
Mississippi	369	Tishomingo County Electric Power Association	10,968	17	24%
Mississippi	372	Tombigbee Electric Power Association	33,980	85	11%
Mississippi Totals			353,309	729	4.40%

District	LPC #	Distributor	2012 Residential Customers	2012 Sample	2012 Margin of Error
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Northeast	7	Alcoa Electric Department, City of	23,519	88	10%
Northeast	30	Bristol Tennessee Electric System	28,412	87	11%
Northeast	32	Bristol Virginia Utilities	13,722	43	15%
Northeast	46	Clinton Utilities Board	25,161	64	12%
Northeast	65	Elizabethton Electric System	22,592	61	13%
Northeast	66	Erwin Utilities	7,676	17	24%
Northeast	81	Greeneville Light and Power System	30,773	78	11%
Northeast	85	Harriman Utility Board	9,497	31	18%
Northeast	103	Jellico Electric and Water System	3,503	12	28%
Northeast	105	Johnson City Power Board	65,354	205	7%
Northeast	106	Knoxville Utilities Board	172,226	375	5%
Northeast	108	LaFollette Utilities	19,069	36	16%
Northeast	114	Lenoir City Utilities Board	48,392	89	10%
Northeast	132	Maryville Electric Department, City	17,261	64	12%
Northeast	144	Morristown Utility Systems	11,683	31	18%
Northeast	167	Newport Utilities	17,642	40	16%
Northeast	169	Oak Ridge Electric Department	13,096	68	12%
Northeast	198	Sevier County Electric System	33,145	91	10%
Northeast	273	Appalachian Electric Cooperative	38,646	103	10%
Northeast	309	Holston Electric Cooperative	24,855	30	18%
Northeast	325	Mountain Electric Cooperative	27,918	50	14%
Northeast	342	Plateau Electric Cooperative	12,890	39	16%
Northeast	346	Powell Valley Electric Cooperative	25,435	60	13%
Northeast District Totals			692,467	1,762	2.60%

District	LPC #	Distributor	2012 Residential Customers	2012 Sample	2012 Margin of Error
Southeast	17	Athens Utilities Board (TN)	10,865	29	18%
Southeast	37	EPB (Chattanooga)	149,189	281	6%
Southeast	39	Chickamauga Electric System	856	1	N/A
Southeast	43	Cleveland Utilities	25,003	64	12%
Southeast	58	Dayton Electric Department, City of	8,351	22	21%
Southeast	67	Etowah Utilities Department	4,349	12	28%
Southeast	123	Loudon Utilities	9,443	60	13%
Southeast	152	Murphy Electric Power Board, Town of	3,344	8	35%
Southeast	189	Rockwood Electric Utility	11,659	41	15%
Southeast	217	Sweetwater Utilities Board	7,012	22	21%
Southeast	275	Blue Ridge Mountain Electric Membership Corporation	37,959	109	9%
Southeast	297	Fort Loudoun Electric Cooperative	27,245	71	12%
Southeast	336	North Georgia Electric Membership Corporation	83,790	201	7%
Southeast	354	Sequachee Valley Electric Corporation	29,299	62	12%
Southeast	377	Tri-State Electric Membership Corporation	14,954	53	14%
Southeast	381	Volunteer Energy Cooperative	92,958	300	6%
Southeast District Totals			516,276	1,336	3.10%

District	LPC #	Distributor	2012 Residential Customers	2012 Sample	2012 Margin of Error
West TN	20	Benton County Electric System	8,547	13	27%
West TN	27	Bolivar Electric Department	8,834	18	23%
West TN	33	Brownsville Utility Department, City of	4,245	7	37%
West TN	34	Carroll County Electrical Department	12,507	31	18%
West TN	55	Covington Electric System	3,741	6	40%
West TN	64	Dyersburg Electric System	9,546	17	24%
West TN	96	Humboldt Utilities	3,507	5	44%
West TN	102	Jackson Energy Authority	27,752	71	12%
West TN	120	Lexington Electric System	17,956	38	16%
West TN	138	Memphis Light, Gas, and Water Division	360,781	591	4%
West TN	142	Milan Public Utilities	6,690	9	33%
West TN	164	Newbern Electric Water & Gas	1,429	3	57%
West TN	174	Paris Board of Public Utilities	15,404	40	16%
West TN	186	Ripley Power & Light Company	5,399	8	35%
West TN	223	Trenton Light & Water Department	1,971	4	49%
West TN	230	Union City Electric System	5,209	10	31%
West TN	235	Weakley County Municipal Electric System	16,267	46	14%
West TN	283	Chickasaw Electric Cooperative	15,451	32	17%
West TN	295	Forked Deer Electric Cooperative, Inc.	8,387	20	22%
West TN	303	Gibson Electric Membership Corporation	28,743	67	12%
West TN	339	Pickwick Electric Cooperative	16,370	34	17%
West TN	357	Southwest Tennessee Electric Membership Corporation	42,217	75	11%
West TN District Totals			620,953	1145	3.50%
Valley Totals			3,891,050	9,276	1.20%

U.S. Postal Service (USPS) zip codes are used to define the sample frame

2. The survey population is comprised of all residential households or businesses residing in the TVA service area. From this population, sample sizes are calculated based on each Local Power Company's total customer base and the proportion of overall TVA service area residential customers represented. Sample sizes are determined based on pooled proportion formula and are calculated to ensure representation of a minimum sample of 30 for each Local Power Company. Individual LPC samples are summed to the seven TVA geographically dispersed District levels. The total sample is designed to attain a margin of error less than 2 percent at the 95 percent confidence level for the overall Valley. See **Table 1** above.

When this method of sampling is used, Local Power Companies within each stratum remain relatively stable due to similar growth patterns over time. While TVA would like to have this information annually with error margins of less than one percent, this is not practical from a cost standpoint or from a response burden. Attaining an overall margin of error of 1.3 percent to 1.8 percent provides sufficient differentiation that TVA can reasonably determine whether the *EnergyRight® Solutions* programs are having an indirect impact on Valley residents. While error margins at the Local Power Company and District level vary, trends and differences can be seen for the larger power companies and the Districts. In addition, TVA offers Local Power Companies the opportunity to request some data by Local Power Company groups. These may be groups of power companies that wish to aggregate service areas for some reason. Reasons might include pooling advertising resources due to a viewing or listening area boundary and the need to determine appropriate messages for these boundaries. A frequency of two to three years provides data at sufficient intervals that trends and changes can be seen without overburdening residents with surveys. This is also possible since this is an indirect measure of the *EnergyRight® Solutions* programs' effectiveness.

Due to the quota sampling method described earlier, it is also necessary to weight responses by Local Power Company. This weighting is designed to account for the over representation of the samples for smaller power companies. Weights are determined by dividing the proportion of the overall Valley residential customer base represented by a Local Power Company's residential customers by the proportion of the overall Valley residential sample represented by a Local Power Company's sample.

Local Power Company Weight = $\frac{\text{Local Power Company Proportion of Residential Customers}}{\text{Local Power Company Proportion of Sample}}$

For simplicity, weights are rounded to the nearest hundredth for analysis.

4. The survey instrument used may be modified slightly between iterations depending upon changes in language usage, appliance availability, and appliance usage patterns. However, most questions remain consistent over time to enhance reliability. Modifications to the survey are carefully considered by various TVA staff that will use the information and are tested by the contractor prior to launching the fieldwork for the survey. These interviews as well as the training are monitored by TVA staff members. In addition, as interviews begin, calls are monitored closely in a further effort to insure reliability of the data gathered.

5. When questions regarding statistical aspects of the survey methodology and analysis arise, TVA relies on our contractor staff. For the most recent study, TNS was the contractor. TNS is a full-service global strategy and research organization specializing in public policy and opinion surveys, banking and finance, telecommunications, media, energy, transportation, insurance and health care. Bios for the TNS staff who work on TVA related survey are below.

James D. Gill, Ph.D.
Senior Vice President
Energy & Emerging Sector Lead

A TNS employee since 1994, Jim has specialized in the design, implementation and management of customer satisfaction and loyalty research programs. Jim is the developer of the TNS Stakeholder Management solution for conducting Customer Satisfaction and Loyalty Research known as ISESSM (Integrated Satisfaction Enhancement System). ISESSM has been used successfully at more than 50 Fortune 1000 companies to build stronger and deeper relationships with their customers. In addition, Jim has served as a consultant to clients' senior management to help implement programs that take strategic advantage of study results to leverage strengths, reduce competitive weaknesses, and allocate corporate resources.

Prior to joining TNS, Jim held the position of Vice President, Customer Satisfaction Measurements at Walker Information for 7 years.

Jim received his Doctor of Philosophy in Business Administration, his M.A. in Marketing, and B.A in Business Administration from the University of Nebraska. Jim is a member of the American Marketing Association.

James D. Gill, Ph.D.
Senior Vice President
Energy & Emerging Sector Lead

TNS
222 Merchandise Mart Plaza, Suite 275
Chicago IL 60654

Phone: (480) 584-4963
Fax: (480) 584-4560
Cell: (480) 510-0899
[Email: jim.gill@tnsglobal.com](mailto:jim.gill@tnsglobal.com)
[Web: www.tns-us.com](http://www.tns-us.com)

Eric Rosenberg
Sr. Project Director, Research Delivery Services

Eric is a Senior Manager on the TNS Research Delivery Services team. As such, he will act as the key point of contact on a day-to-day basis coordinating all aspects of each project's execution.

Eric joined TNS in May 2005 and has worked on a variety of projects including a 15 country consumer electronics tracking study, brand equity studies for a global apparel company and customer satisfaction trackers in the tech sector and utilities industry.

He is currently involved in concept testing in the tech sector and manages a customer satisfaction and brand health program for a large regional utility.

His previous experience includes 8 years at a financial marketing consulting firm and 5 years at a consulting firm focused on employee training and market research. He also worked for several years as an independent consultant. Eric received his BA in Finance and MBA in Marketing and Strategic Planning from the University of Illinois.

Eric is currently located within the TNS facility in Chicago, IL

Eric Rosenberg
TNS
222 Merchandise Mart Plaza, Suite 275
Chicago IL 60654
Phone: 312 981 5747
Eric.Rosenberg@tnsglobal.com