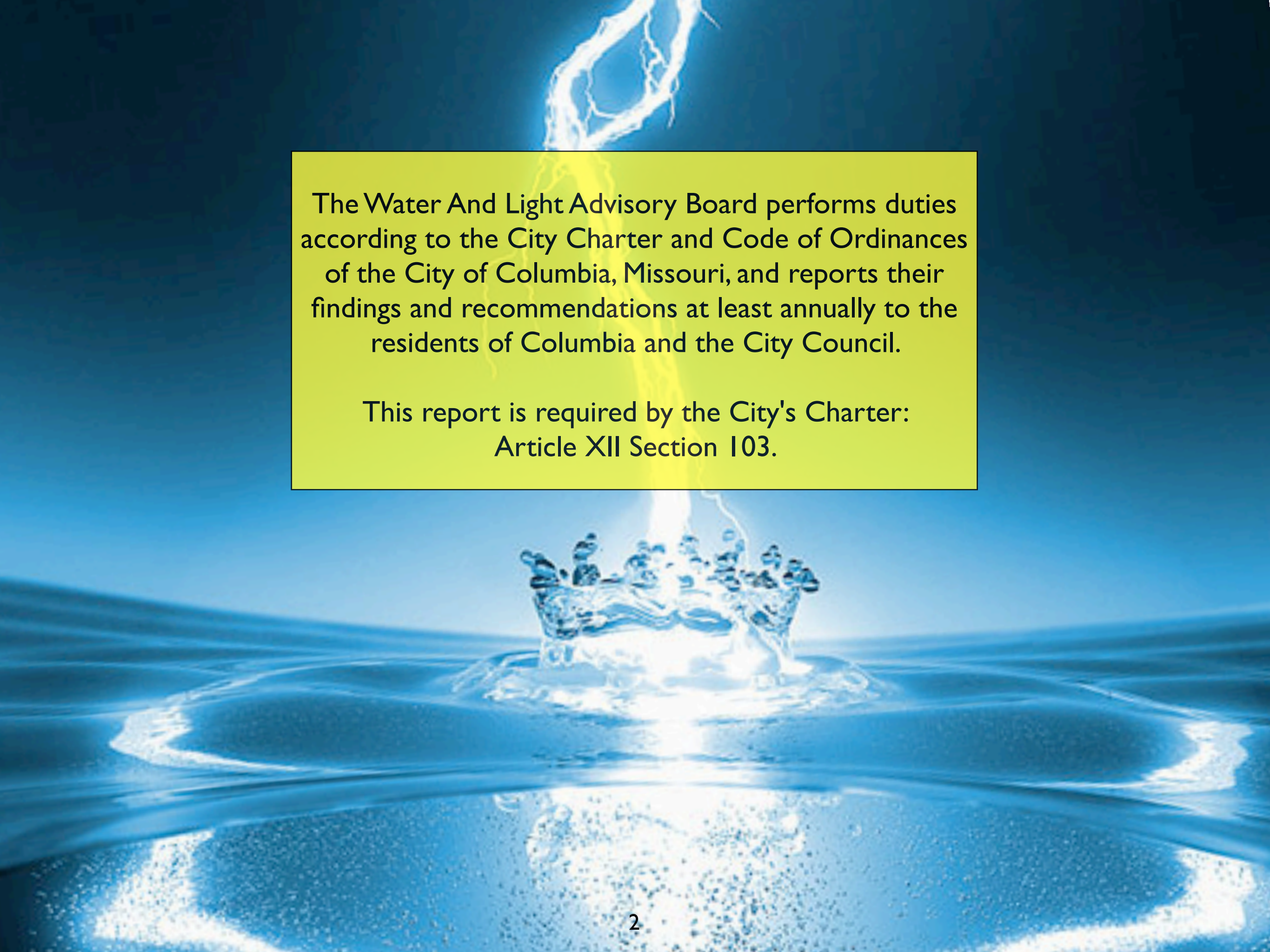




Water & Light Advisory Board

2015 Report to the People and Council



The Water And Light Advisory Board performs duties according to the City Charter and Code of Ordinances of the City of Columbia, Missouri, and reports their findings and recommendations at least annually to the residents of Columbia and the City Council.

This report is required by the City's Charter:
Article XII Section 103.

Findings



Contents:

Breakdown of energy portfolio.

Report on amount of electricity and water usage, both gross figures and per-capita.

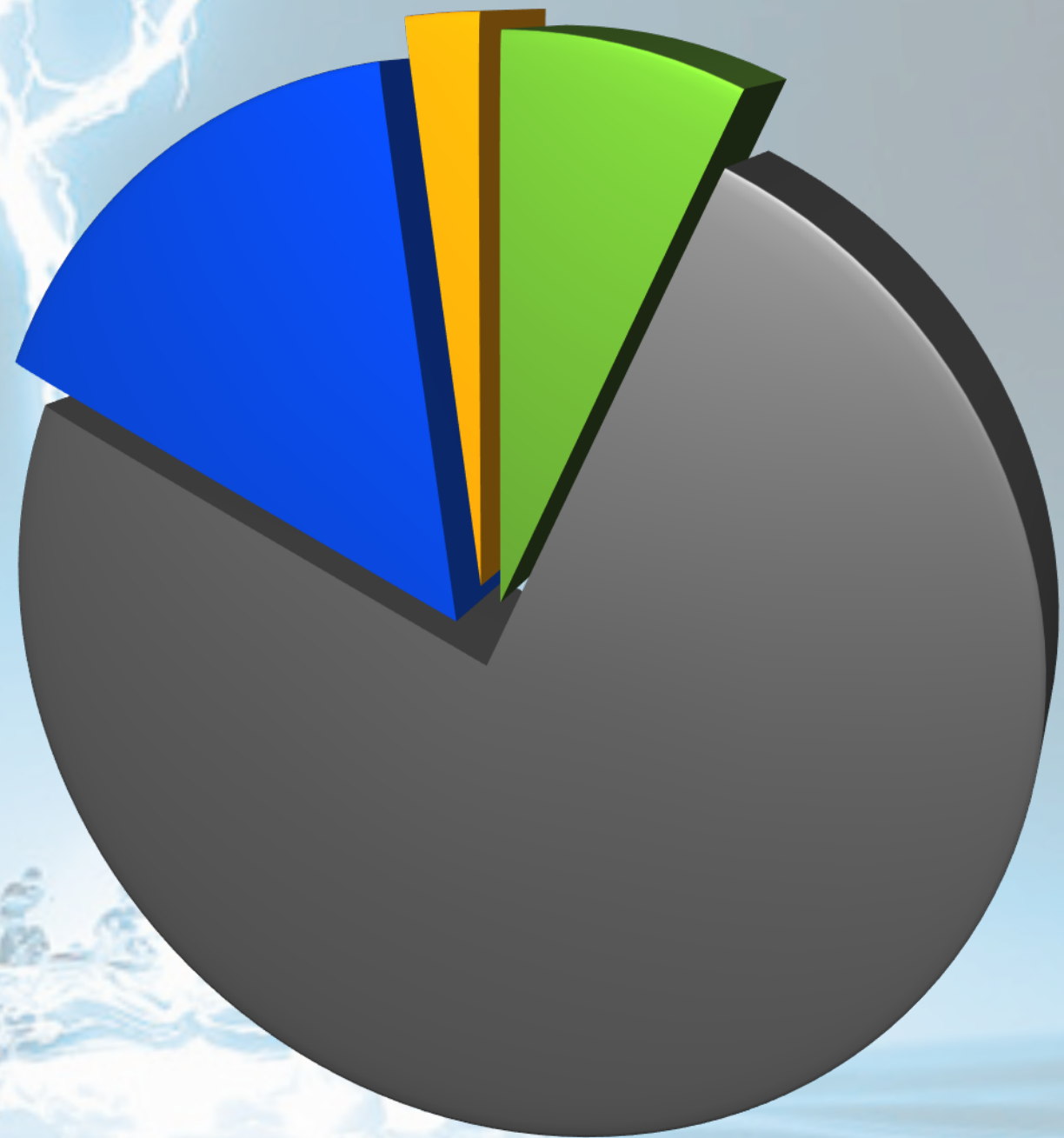
Available data on greenhouse gas emissions.

Review of rate structures.

Review of board activities, projects, and issues for the year.

2015 Energy Portfolio

- RENEWABLES
- COAL Contracts
- MISO Market
- CWL Bus. Loop Power Plant



	TOTAL OVERALL PORTFOLIO	RENEWABLES	COAL Contracts	MISO Market	CWL Bus. Loop Power Plant	CWL Columbia Energy Center
MWh	1,185,017	80,794	891,347	187,418	25,458	0

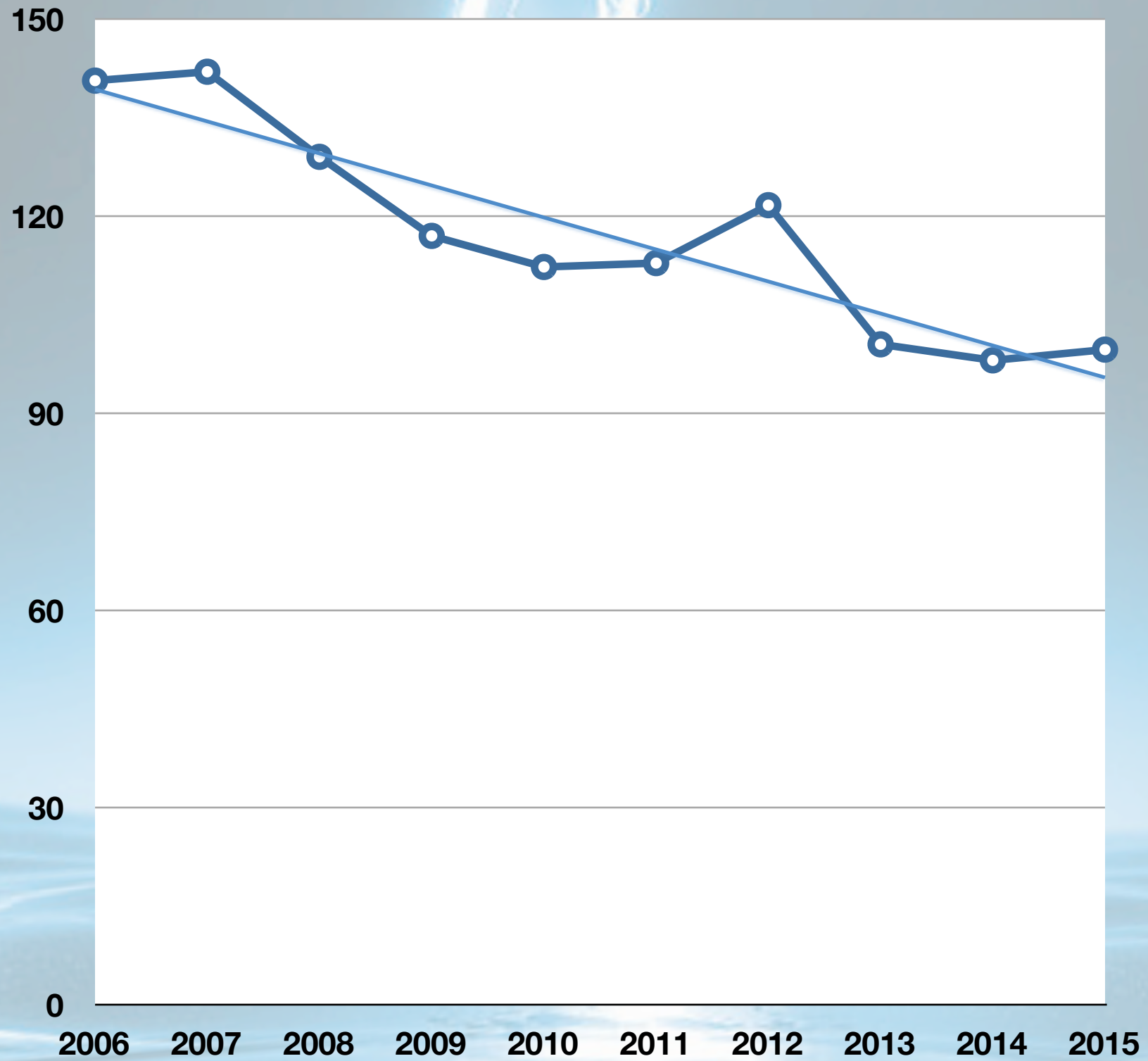
Total Annual Water Usage, Billion Gallons/year



In 2015, our water treatment plant supplied us with 4,330,000,000 gals of high-quality treated drinking water.

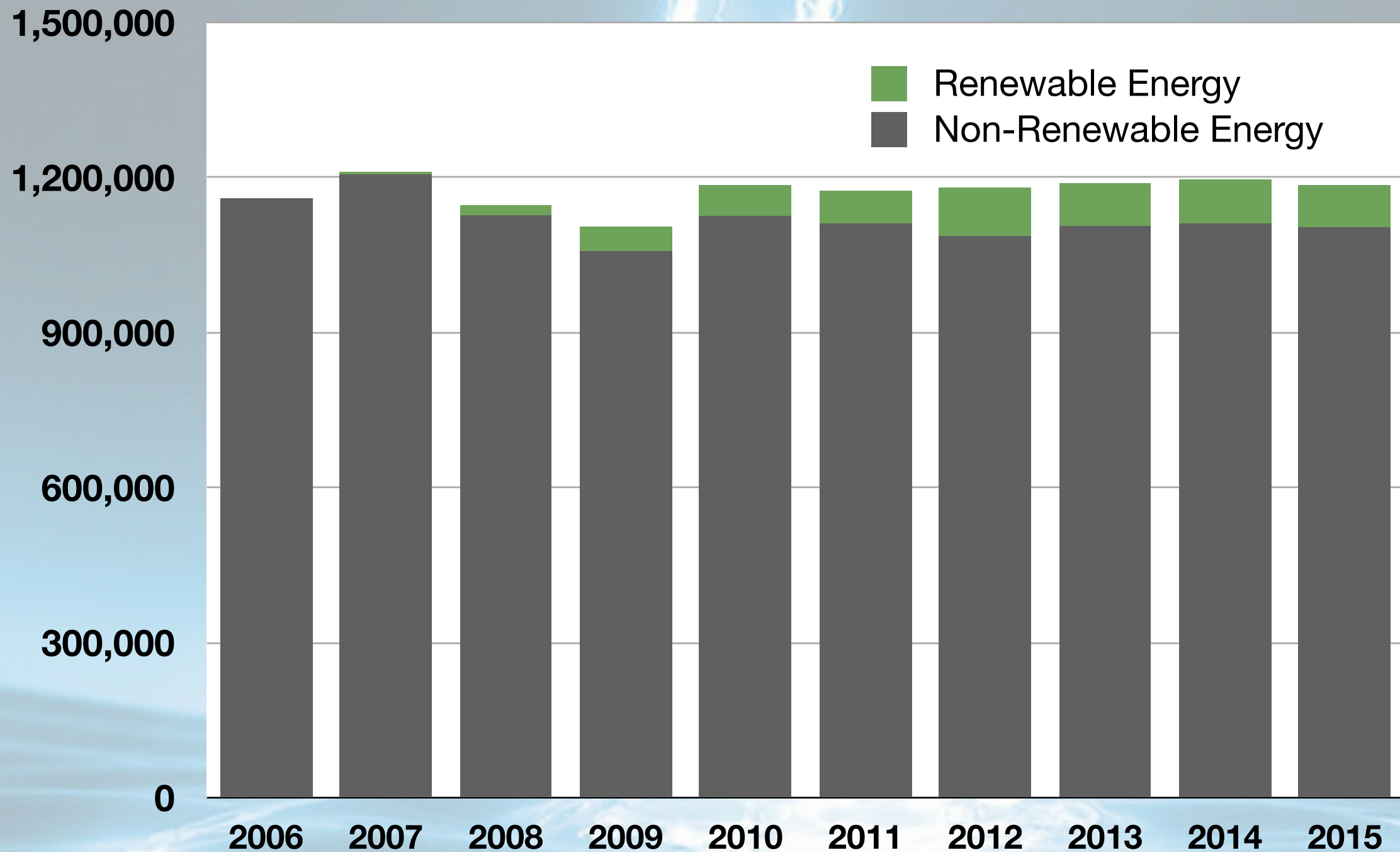
Water usage over the past ten years exhibits a downward trend.

Gallons of water/person/day



Water usage over the past ten years is declining on a per-capita basis.
(population from census.gov)

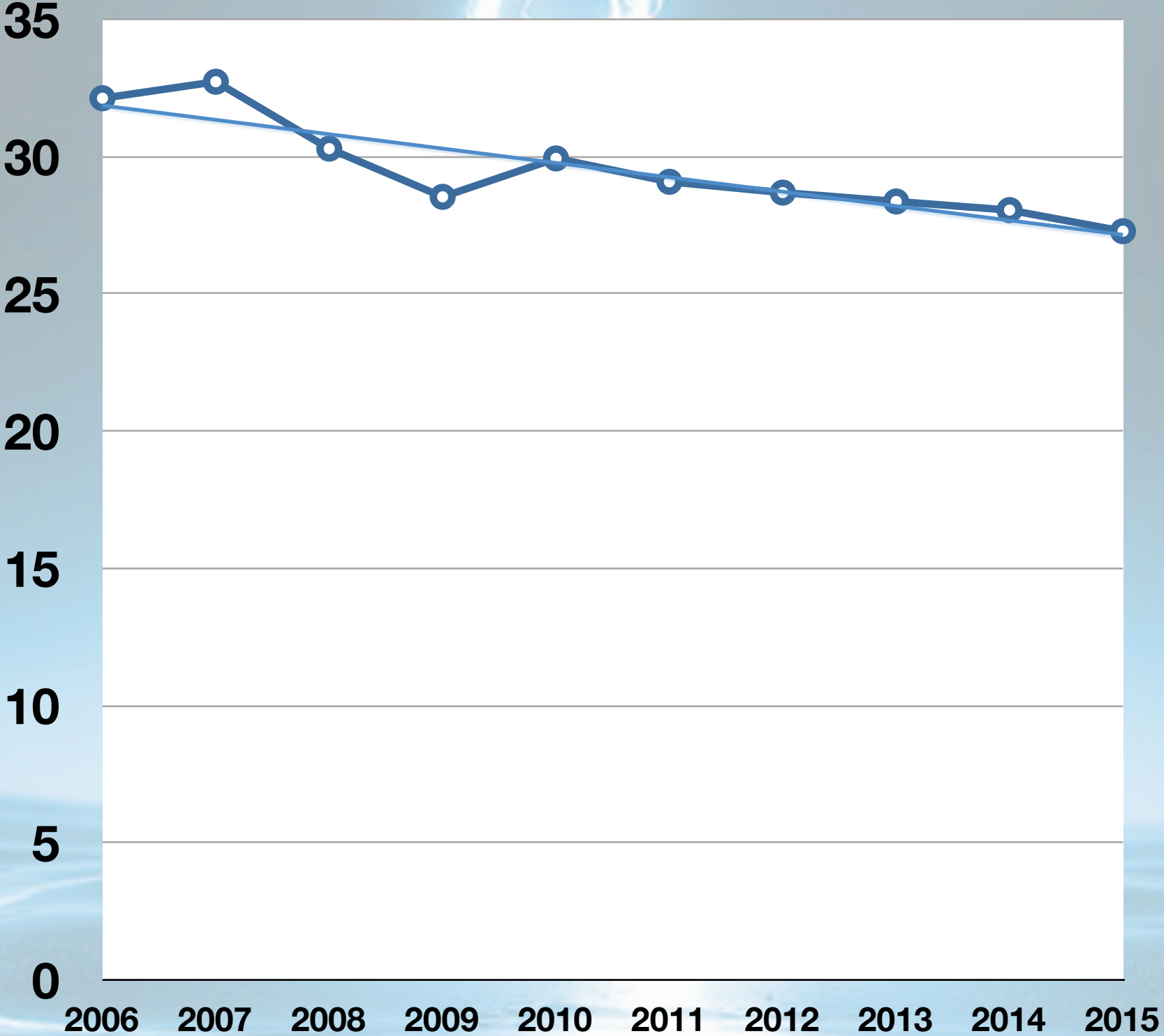
Total Annual Electrical System Usage, Megawatt-hours



In 2015, we used about 1,200 Gigawatt-hours of electricity, 6.8% of which was renewable.

Electric usage over the past ten years is basically flat.

Kilowatt-hours/person/day



Electric usage over the past ten years is declining on a per-capita basis.
(population from census.gov)

CAFR

An archive of Water and Light financial information is provided in the City of Columbia's Comprehensive Annual Financial Report (CAFR):
<https://www.como.gov/finance/wp-content/uploads/sites/21/2015/11/City-of-Columbia-Missouri-CAFR-FY15.pdf>

These tables show the largest users of our water and electric systems.

Table 22

City of Columbia, Missouri
 LARGEST ELECTRIC UTILITY CUSTOMERS
 SEPTEMBER 30, 2015

Customer	Billed kWh	Billed Revenue
Boone Hospital Center	29,548,480	\$ 2,363,025
Columbia Foods	27,623,708	2,154,301
3-M Company	25,530,808	1,833,807
VA Hospital	19,292,884	1,612,627
Gates Rubber	15,301,581	1,291,234
Quaker Oats	14,007,862	1,118,030
University of Missouri Regional Hospital	10,546,282	853,948
PW Eagle	8,914,292	702,788
City of Columbia Sewer	8,278,372	632,774
GGP Ltd-Columbia Mall	7,955,643	745,138
	<u>166,999,912</u>	<u>\$ 13,307,672</u>

Table 23

City of Columbia, Missouri
 LARGEST WATER UTILITY CUSTOMERS
 SEPTEMBER 30, 2015

Customer	Billed CCF	Billed Revenue
Columbia Foods	366,987	\$ 939,610
Boone Hospital Center	51,231	139,130
3M Company	50,191	125,809
VA Hospital	35,616	102,982
University of MO	28,432	80,744
Linen King	24,762	66,509
JM Eagle	21,165	54,017
Best Men LLC	20,069	52,775
Executive Center	16,894	42,833
CPS Rockbridge	15,797	47,864
	<u>631,144</u>	<u>\$ 1,652,271</u>

CAFR

Water and Light Revenue Bond Coverage

Table 19

City of Columbia, Missouri

WATER AND ELECTRIC UTILITY REVENUE BOND COVERAGE (a) LAST TEN FISCAL YEARS

Fiscal Year Ended	WATER AND ELECTRIC UTILITY REVENUE / REFUNDING BONDS (c)						Revenue Bond Coverage
	Operating Revenue (d)	Operating Expenses	Net Revenue	Principal	Interest (b)	Total	
2006	\$ 105,384,237	\$ 85,904,487	\$ 19,479,750	\$ 575,000	\$ 3,308,873	\$ 3,883,873	5.02
2007	116,758,098	84,055,177	32,702,921	3,595,000	4,332,137	7,927,137	4.13
2008	121,609,839	90,723,595	30,886,244	3,755,000	5,079,238	8,834,238	3.50
2009	132,415,953	99,094,026	33,321,927	3,875,000	6,125,758	10,000,758	3.33
2010	142,829,724	104,960,352	37,869,372	4,020,000	6,206,577	10,226,577	3.70
2011	151,526,817	107,813,998	43,712,819	4,175,000	6,354,157	10,529,157	4.15
2012	147,075,417	100,038,432	47,036,985	5,360,000	8,714,110	14,074,110	3.34
2013	146,188,407	111,187,318	35,001,089	6,545,000	8,501,203	15,046,203	2.33
2014	152,473,820	116,235,925	36,237,895	6,665,000	7,798,291	14,463,291	2.51
2015	152,500,629	110,335,849	42,164,780	6,745,000	7,174,035	13,919,035	3.03

(a) Revenue bonds and their related interest are payable solely from the revenues derived from the operation of the enterprise owned by the City. The taxing power of the City is not pledged to secure payment of the bonds and interest.

(b) Interest payments made in the fiscal year.

(c) This includes Special Obligation Bonds, Series 2012D and 2012E, which are to be treated as a water and electric utility revenue bond issue.

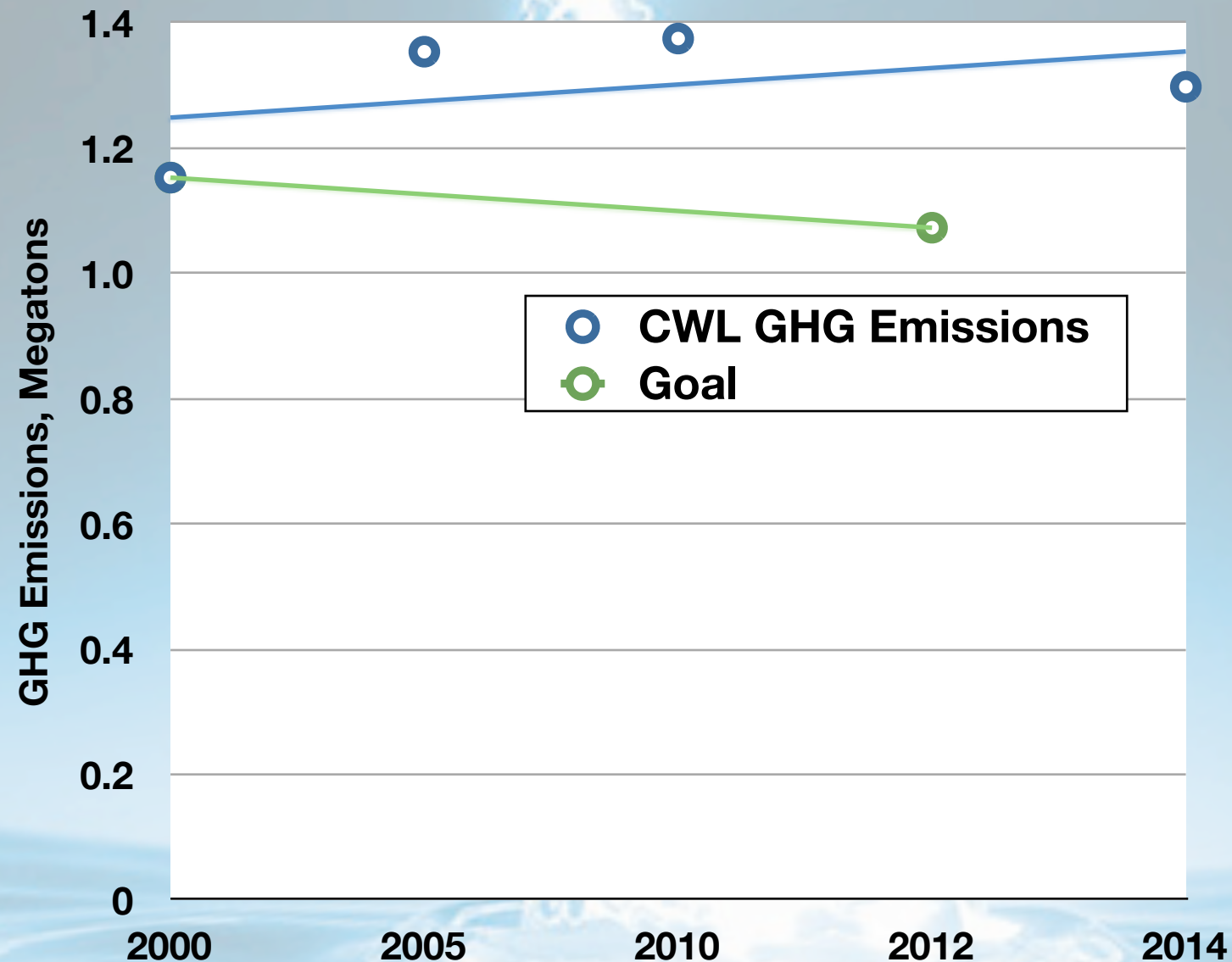
(d) Includes investment and miscellaneous revenue in fiscal year 2009 and thereafter.

Bond Coverage is the ratio of net revenue to bond payments.

The 10-year revenue bond coverage trend is a major factor in the City's current favorable A+ bond rating.

Greenhouse Gas Emissions

GHG Emissions vs. Goal



On July 7, 2006, Council adopted a GHG reduction goal of 7% from a year 2000 baseline to the year 2012.

From 2000 to 2014, CWL's GHG emissions increased by 13%.

(data from GHG Inventory 2010 Update, August 2012)

Rates



Since we rarely see all the rate information on one sheet, water and electric rates are provided herein as reference material.

Water Rates

CWL Water Rates (Inside City Limits)	Monthly Base Rate	Fire Flow Charge	non-Summer, all CCF	Summer, first 2 CCF	Summer, add'l CCF
<i>Residential</i>					
5/8 and 3/4 inch	\$8.30	\$1.55	\$2.79	\$2.79	\$3.91
1 inch	\$8.73	\$1.64	\$2.79	\$2.79	\$3.91
1.5 inch	\$12.84	\$2.38	\$2.79	\$2.79	\$3.91
2 inch	\$13.46	\$2.56	\$2.79	\$2.79	\$3.91
3 inch	\$22.67	\$6.15	\$2.79	\$2.79	\$3.91
4 inch	\$33.61	\$9.51	\$2.79	\$2.79	\$3.91
6 inch	\$64.63	\$19.03	\$2.79	\$2.79	\$3.91
<i>Commercial</i>					
			non-Summer, per CCF	Summer, per CCF	Summer Over Baseline*, per CCF
5/8 and 3/4 inch	\$8.30	\$1.55	\$2.60	\$2.60	\$3.91
1 inch	\$8.73	\$1.64	\$2.60	\$2.60	\$3.91
1.5 inch	\$12.84	\$2.38	\$2.60	\$2.60	\$3.91
2 inch	\$13.46	\$2.56	\$2.60	\$2.60	\$3.91
3 inch	\$22.67	\$6.15	\$2.60	\$2.60	\$3.91
4 inch	\$33.61	\$9.51	\$2.60	\$2.60	\$3.91
6 inch	\$64.63	\$19.03	\$2.60	\$2.60	\$3.91
				* baseline is 70% of winter usage	
<i>Large Commercial</i>					
			non-Summer, per CCF	Summer, per CCF	Summer Over Baseline*, per CCF
5/8 and 3/4 inch	\$8.30	\$1.55	\$2.43	\$2.43	\$3.91
1 inch	\$8.73	\$1.64	\$2.43	\$2.43	\$3.91
1.5 inch	\$12.84	\$2.38	\$2.43	\$2.43	\$3.91
2 inch	\$13.46	\$2.56	\$2.43	\$2.43	\$3.91
3 inch	\$22.67	\$6.15	\$2.43	\$2.43	\$3.91
4 inch	\$33.61	\$9.51	\$2.43	\$2.43	\$3.91
6 inch	\$64.63	\$19.03	\$2.43	\$2.43	\$3.91
<i>Irrigation, all CCF</i>		13	non-S rate	\$3.91	

Electric Rates

CWL RATE SCHEDULE (Effective June 2015)	Monthly Base Rate	Demand Charge	< 300 kWh; cents/kWh	301-750 kWh; cents/kWh	750-2,000kWh; cents/kWh	> 2,000kWh; cents/kWh
Residential Rate—Summer (June-Sept)	\$15.60		7.52	9.8	13.36	14.45
Residential Rate—Non-Summer	\$15.60		7.52	9.8	11.32	11.32
Residential Rate—Non-Summer with 5 kW electric heat	\$15.60		7.52	9.8	9.42	9.42
Residential—Non-Summer with Heat Pump	\$15.60		7.52	9.8	8.93	8.93
			< 500 kWh; cents/kWh	501-1,500kWh; cents/kWh	> 1,500kWh; cents/kWh	
Small General Service—Summer	\$15.60 (\$25.70 for 3 ph)		8.0	10.2	14.07	
Small General Service—Non-Summer	\$15.60 (\$25.70 for 3 ph)		8.0	10.2	10.2	
Small General Service—Non-Summer w/ 5 kW electric heat	\$15.60 (\$25.70 for 3 ph)		8.0	10.2	9.4	
Small General Service—Non-Summer w/ Heat Pump	\$15.60 (\$25.70 for 3 ph)		8.0	10.2	8.86	
SGS Alternative Option:			all kWh			
Summer (June-Sept)	\$45	\$15.60	5.63			
Non-Summer	\$45	\$12.50	4.9			
			all kWh			
Large General Service (25 - 750 kW peak)—Summer	\$150	\$360 plus \$15.60 per add'l kW	5.63			
Large General Service (25 - 750 kW peak)—Non-Summer	\$150	\$270 plus \$12.50 per add'l kW	4.9			
Industrial Service (> 750 kW peak)—Summer	\$150	\$15,525 plus \$20.70 per add'l kW	4.73 (3.78 at night)			
Industrial Service (> 750 kW peak)—Non-Summer	\$150	\$12,375 plus \$16.50 per add'l kW	4.04 (3.39 at night)			
Transmission Service		market price, no markup				

Review of Board Activities, Projects, and Issues



Contents:

- Administrative and Board Governance/Training
- Reports
- Major Financial Activities
- Electrical Division Activities
- Water Division Activities

Administrative and Board Governance/Training

1) The Water and Light Advisory Board had 13 regularly scheduled meetings with two additional meetings/work sessions. All meetings/work sessions with a quorum receive public notice with minutes recorded and posted to the Water and Light Department website. The meetings were held in the Water & Light Administration offices, Water Production Building, Water Distribution Building, Electric Production Building, and Electric Distribution Building.

2) Election of officers was conducted during the January meeting with John T. Conway, PE elected Chairman and Dick Parker elected Vice-Chairman.

3) Updated the "Annual Calendar" of repeating business activities to help direct our monthly meetings (an updated copy is attached).

4) All five board members attended the Advancing Renewables Conference held in Columbia in April 2015.

Administrative and Board Governance/Training

5) Three Board members, John Conway, Jack Clark and Dick Parker, attended the annual conference of the Missouri Public Utility Alliance (MPUA) in 2015.

6) The Utility Services Division provided a booth at the Sustainability Living Fair and at the Earth Day festival.

7) City Strategic Plan - The board was informed that the City's strategic plan has been approved and groups have been formed to develop and execute implementation plans for different strategic priorities. Mr. Glascock informed the board of the five priority areas: Economy, Social Equity, Public Safety, Infrastructure, and Operational Excellence. As the plan is implemented, the focus will be on three geographical areas: Sexton Road, Brown School Road/ Derby Ridge, and Ballenger Lane. Mr. Johnsen advised the board that he would like to have the lead of the Infrastructure Strategic Planning Group attend and present to the Water & Light Advisory Board (WLAB), the role of the Water and Electric Utilities in the current strategic plan.

Reports

1) The Annual Customer Satisfaction Survey was completed for 2015. The overall satisfaction level with electric service went up. The Net Positive Index for electric service went up 9 points and the water went up 2 points. For both residential and commercial customers, Columbia is 8 points higher than the national benchmark for electric and 10 points higher for water service.

2) In November of 2014 an evaluation was completed by Crockett Engineering to see where on the property the department could build the first phase of the project identified in the Space Needs Analysis developed by Yaeger Architecture for the Water and Electric Distribution complex. The first phase of the project is the PCB Warehouse. In January 2015 a new RFP was issued to purchasing for building the PCB Warehouse. The contract for the PCB Warehouse has been issued and the start date was March 7, 2016. Expected Completion date is April 19, 2016.

A Space Needs Analysis has been developed by Yaeger Architecture for the Water and Electric Distribution complex. The plan includes a 20 year, six phase plan to improve operations.

3) Water and Light Staff updated a Google site developed as an orientation for new Board members.

Reports

4) Tad Johnsen, Water and Light Director, provided the Annual Director's Report to the Board. For the water supply service side of the business, progress has been made on installing the 3 new wells for raw water supply, lime softening residuals planning and Integrated Water Resource Planning. For the electric supply service side of the business, progress has been made on development of a community photovoltaic facility, energy efficiency customer outreach, Columbia Energy Center staffing needs, responses to the July 7th weather event, and planning for the next bond issue.

In looking forward to the 2016 activity on the electric supply service side, the department will bring the Community Solar project forward, budgeting for a advanced metering pilot program, full year of Customer Outreach for energy efficiency programs, update of the Strategic Plan and our community broadband planning efforts.

Reports

5) In 2013, the City of Columbia, University of Missouri and Regional Economic Development Incorporated (REDI) commissioned a needs assessment to determine the community's broadband needs, now and in the future. Magellan Advisors was the consultant chosen to perform a Broadband Needs Assessment & Planning Study. The study focused on the availability, cost and reliability of high-speed internet in the health, education and business sectors. In 2015 and again this year there are multiple Missouri Senate and House bills aimed at prohibiting/limiting municipalities from offering broadband internet service.

By fall 2015 numerous incumbent providers announced plans to deploy fiber based gigabit services to areas of Columbia. In December of 2015 the City of Columbia contracted with Magellan Advisors to update their 2014 report, which was based on data collected in 2013. To update their report, Magellan will complete a current broadband market analysis and a field verification survey.

Magellan's market analysis will determine the services that are available, providers, service level, pricing and access. They will work to document all privately owned networks in Columbia and to build a comprehensive broadband map in ESRI GIS format to illustrate how Columbia is served by broadband and through which providers. Magellan proposes to meet with each identified provider to document the infrastructure changes that have occurred since the previous set of meetings. This analysis will document fiber infrastructure, facilities, data centers, and related infrastructure in Columbia to determine how the community is being served today.

Magellan will also conduct field verification in Columbia to determine the extent of the providers' ability to deliver fiber based gigabit services. Their team will identify areas that have been deemed to include fiber distribution technologies, as well as the general fiber service areas identified by providers. Structures such as equipment and splice cabinets, as well as specific fiber routes and supporting infrastructure assets will be captured where relevant.

Magellan's update is expected by summer 2016.

Reports

- 6) A referral program for the Home Performance Energy Star Program was endorsed by the board based upon a presentation by Terry Freeman. Water and Light has provided 81 referral incentives since inception of this program.
- 7) The Department conducted an interested parties meeting for Columbia's MISO Transmission Tariff on July 24, 2015.
- 8) The board forwarded a recommendation to Council for a draft ordinance for "Solar Rights" on January 13, 2015. The City Council referred this draft ordinance to the P&Z Commission during the February 2, 2015 City Council Meeting. The P&Z Commission has not responded.
- 9) The board provided an endorsement for the CoMo Energy Challenge. The Office of Sustainability is managing this program. Columbia Water and Light supports the CoMo Energy Challenge effort by reporting the number of HPwES assessments and free energy assessments completed in Columbia.

Columbia is in 14th place for the Georgetown University Energy Prize. The Sustainability Office recently presented on Columbia's efforts using data to delve deeper into energy savings. The report highlighted the partnership between all utilities providing usage disclosure and the map that has been created from combining assessor data with it. A link to the archived webinar is <https://guep.org/archived-webinars/>. Next steps for the challenge include strategic neighborhood outreach, additional outreach with Partners in Education – CPS Science Department, and review of after-contest policies to promote.

Major Financial Activities

- 1) The Board worked with the Department Staff in the development of the FY16 Budget for Operations/Maintenance and Capital Improvement Plan (CIP).
- 2) The Board reviewed the Cash Reserve Policy for the Water Operations and Electric Operations at the November meeting. Cash and marketable securities for Water as of 9/30/15 was \$5,906,519 and for Electric was \$15,337,309.
- 3) An Electric Rate increase of 3.0% was effective June 2015.
- 4) Columbia Energy Center (CEC) operations reported a savings of approximately \$156,132 from October 2014 through September 2015.
- 5) The Payment in Lieu of Taxes (PILOT) contribution from the Water and Light Department to the City's General Fund was \$15,223,336 in FY15. A contribution of \$15,450,000 is estimated for FY2016.
- 6) The Standard & Poor's Ratings Services downgraded the bond rating due to an error by the rating agency that should not have increased the bond rating previously from AA- to AA. This was a corrective action.
- 7) The Electrical Enterprise expensed \$11,857,184 for Depreciation in FY15 and \$11,849,900 for the FY16 Budget. The Water Enterprise expensed \$2,964,838 for Depreciation in FY15 and \$2,913,834 for the FY16 Budget.

Electrical Division Activities

1) Followed up on the recommendations from the SERC Reliability Corporation and Midwest Independent System Operator (MISO) report.

2) Continued to initiate efforts to maintain compliance with the City's Renewable Energy Ordinance. The 2016 Draft Annual Report has been issued.

3) The Electric Cost of Service Study included three recommendations. The second one listed below was implemented by the increased base charge. The other two recommendations were not implemented.

1.) A “rate track” that proposed 2.2% per year from FY12 through FY16

* While “rate track” is based on cost-of-service allocations, the actual percentage is determined by bond costs; O&M cost projections; projected debt service coverage ratio, cash reserve projections and the overall impact of other rate changes by other utilities on customers. These are all evaluated each year and rate track is adjusted accordingly.

2.) Recommended rate adjustments by customer class

3.) Cash reserve policy based on “Utility Basis” formula

* A modified cash reserve policy was implemented that utilizes features of both the cash basis and utility basis.

Electrical Division Activities

4) The Board accepted the staff's continuance of the "Window Air Conditioner Exchange Program" which is administered through the Voluntary Action Center.

5) The "Home Energy Score" was developed and has been implemented. Water and Light staff completed 1,847 Home Energy Scores during the time period of April 2015-March 2016.

6) Electric Bond Issue Projects were completed and carried forward in the FY2015 CIP. The Capital Improvement Plan (CIP) Budget was introduced. For FY16, Electric, total funding from Enterprise Revenue is \$3,600,000 and total funding from 2015 bonds is \$11,800,000 for a total funding for projects of \$15,400,000. During the planning of the bond issue, the Board shifted more capital projects to Enterprise Funding to decrease the amount of revenue bond issue.

Electrical Division Activities

7) In July 2013 a Public Hearing was held to select a route for The Columbia Electric Transmission Line Project from three options, Option A, Option B and Option B-2. At the conclusion of that Public Hearing, Option A was selected by Council and staff began working on design, funding and project details. In April 2015, Columbia voters approved a bond issue with a portion of its funds to finance this project. On September 30, 2015 an open house was held to review project design details with the public and collect feedback regarding locations of pole structures. Since that time, citizens have expressed concerns and confusion with the project as a whole and at the November 16, 2015 City Council meeting, Council decided to hold a second Public Hearing on the route options and asked for some additional details.

After a special, second public hearing on the route for the transmission lines, the Columbia City Council decided on January 19, 2016 to not build transmission lines according to the Option A route. This project is on hold until further direction is given by the City Council. The Advisory Board voted to continue with Option A.

Electrical Division Activities

8) The Electrical peak demand was 262 MW for 48,249 customers.

9) A total of 330 kW of solar photovoltaic (PV) power has been installed at the COLT Transload. The PV system produced 402 MWh from April 2015 – March 31, 2016.

10) Coal combustion at the Municipal Power Plant (MPP) ceased on September 22, 2015 due to regulations regarding Coal Combustion Residuals and the Industrial Boiler MACT rules. Water & Light continues to study the conversion of Boiler 7 at the MPP to burn biomass. A detailed thermal and computation fluid dynamics study is underway to determine the expected performance and pollutant profiles of the boiler with the biomass fuel. Boiler 7 and its matching Turbine 7 have been put into long term lay-up to preserve the units while the biomass study continues. A construction air permit for the biomass conversion was issued by MDNR on December 8, 2015.

Work as begun on a project to reduce NO_x emissions on the natural gas fired Boiler 8 at the MPP. The project will reduce NO_x emissions by a factor of 10. After a successful winter run, the boiler was taken out of service and construction of the improvements began on March 14, 2016. MNDR issued a construction air permit for these improvements on December 8, 2015.

Electrical Division Activities

11) Water and Light is in the process of outlining the issues and steps to starting a municipally owned Community Solar Program. The goal is to provide solar energy to ratepayers at lower prices than they can achieve with customer sited solar. The West Ash solar field was completed and provides 278 kW of energy.

12) The Board approved the continuation of the Enhanced Home Performance with Energy Star (EHPwES) program.

13) The Energy Efficiency Expo was not held in 2015 due to Boone County Fairgrounds closing and Boone Electric not having access to the space any longer. Columbia Water & Light participated in other events throughout the year to educate customers about energy efficiency. Around 9,700 students and adults benefitted from Columbia Water & Light educational efforts in 2015.

14) The department received the annual NERC Compliance Report. There were no findings of non-compliance.

Water Division Activities

- 1) Review of the 2015 Annual Water Quality Report was conducted and the report was sent to all water customers. The lead content of the finished water supply was well within the MCL for lead.
- 2) The annual update report for the "Source Water Protection Plan" was received.
- 3) The water peak demand was approximately 19 MGD for approximately 46,727 customers for FY15.
- 4) The Capital Improvement Plan (CIP) Budget was introduced. For FY16, Water, total funding from Enterprise Revenue is \$1,000,000 and total funding from prior year funding is \$2,394,000, for a total funding for projects of \$3,394,000.
- 5) The Department issued a RFP for an Integrated Water Resource Planning Study and awarded this contract to Black & Veatch. In support of this process an Integrated Water Resource Planning committee has been established that consists of the Water & Light Advisory Board plus 4 council appointed members plus staff from Sustainability and Community Development as an ad hoc member. The planning committee work for this is expected to start with an introductory meeting on April 13th, 2016.

Recommendations

- Enhance promotion of solar (both photovoltaic and thermal)
- Enhance promotion of heat pump systems
- Enhance promotion and study the impact of a move to electric vehicles
- Pursue city-owned photovoltaic installations
- Define sustainability goals and track metrics
- Continue to examine our rate philosophies and our rate structures
(e.g., conservation, simplification, time-of-use, etc.)
- Set a goal of being one of the first sustainable water and electric utilities in the US
- Have each council member attend one W&L Advisory Board meeting each year
- Enhance utility assistance programs (CASH, HELP) and energy efficiency programs

Looking Ahead

Transitioning to sustainable water and energy systems will be one of the greatest challenges of our time—not only for water and energy systems professionals, but for all of us who benefit from the use of these systems.

The people of Columbia are fortunate to have Columbia Water and Light. But just because we own an excellent public utility doesn't mean that we can abdicate personal responsibility.

We all need to step up to the challenge, so that future generations can continue to enjoy the safe, reliable energy and water that we take for granted.

That means taking some individual responsibility, and moving beyond the mindset of having all the electricity and water we could possibly want, at any and all times, for any reason at all, or for no reason whatsoever.

Rather than forcing our utility to maintain the illusion of limitless resources and meet every conceivable future demand, we Columbians need to modify our demands to meet sustainable, affordable sources of water and energy.



Water & Light Advisory Board

2015 Report to the People and Council

Respectfully Submitted by

John Conway

Dick Parker

Tom O'Connor

Hank Ottinger

Jack Clark