2017

Annual Sustainability Report

INCLINE VILLAGE
PUBLIC WORKS

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ACKNOWLEDGMENTS

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Incline Village General Improvement District (IVGID)

Department of Public Works

Waste Not Program

This report is not possible without the support of the Crystal Bay and Incline Village community and all the hard-working individuals who make it possible to thrive here. The Waste Not Program was founded in 1992 by dedicated residents with a goal to increase conservation and recycling services available to residents and visitors of the area. Since then, the program has grown its capabilities and responsibilities to include sustainability as a key strategic principle. Invaluable residents, students and business owners, IVGID staff from all departments and previous Americorps Members have contributed to this report directly or indirectly through participation in local conservation programs.

CONTACT US FOR MORE DETAILS:

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ABOUT THIS REPORT

Introduction

2017 was an unforgettable year. Winter storms covered Lake Tahoe in a thick white blanket of snow. "Januburied" was a common social media thread as locals and visitors alike admired the snow banks that lined roadways and inundated homes. Diamond Peak Ski Resort received almost 500 inches of snow within the ski season. Local streams raged to life in the spring, depositing more sediments and nutrients into the lake along with the added water. The drought that plagued the region since 2014 finally subsided, only to encourage more vegetative growth.

Public Works is a part of the Incline Village General Improvement District (IVGID) on the north shore of Lake Tahoe in the state of Nevada. IVGID is a quasi-public agency established under Nevada Revised Statute, Chapter 318 and chartered to provide water, sewer, trash, and recreation services for the unincorporated communities of Crystal Bay and Incline Village, Nevada. It is governed by an elected Board of Trustees which, acting on behalf of the electorate, sets policy and determines strategies to accomplish its Strategic Plan. Both Crystal Bay and Incline Village are located within Washoe County, the entity that had the authority to create IVGID.

The Department of Public Works follows leadership directive and policy pursuant to IVGID's Vision, Mission and Values. This report will focus on sustainability performance as it pertains to IVGID Administration and Public Works and does not include data for any recreation venues that IVGID owns.

What is Sustainability Reporting?

The purpose of the IVGID Sustainability Program is to responsibly manage resources under IVGID's care, protect public health and balance its social and environmental duties to the citizens and community while providing cost-effective services to ratepayers. Sustainability holds importance to Incline Village Public Works in terms of environmental, social and economic security. This importance is highlighted by Lake Tahoe, the place where we live, work, invest, and play.

Community stakeholders, utility managers, and regulatory agencies are increasingly interested in utility sustainability, typically described in terms of economic, social and environmental effects and commonly referred to as the triple bottom line. Sustainability reporting initially began in the 1960s and 1970s as the environmental movement grew and corporate social responsibility alongside environmental impacts became primary considerations as investment selection criteria.

Water and wastewater treatment systems are designed to prevent pollution, conserve natural resources, support local commerce and protect the public health. The purpose of operating in a more sustainable manner is not to add more work, cost or complexity to an organization; rather, sustainability practices and reports encourage stakeholders to understand how operations integrate with the global economy, community and environment now and for future generations.

Benefits of Sustainability Reporting

This report provides a vehicle for Public Works to respond to heightened stakeholder expectations for transparent disclosure of economic, social and environmental effects in terms of the essential organizational structure. According to the Water Environment Federation, Sustainability reports have many positive effects that are able to:

- Unify the management system within the organization;
- Reinforce organizational commitments and demonstrate progress;
- Focus on energy, water and materials management;
- Improve internal governance;
- Document direct cost savings that result from more efficient operations;
- Integrate long-term social, environmental and economic objectives within the organization;
- Set an example for other organizations or public agencies - thereby gaining recognition;
- Enhance the organization's profile and reputation;
- Promote transparency and accountability;
- Encourage stakeholder involvement;
- Improve investment options and value.

Sustainability Report Highlights: Calendar Year 2017

The Public Works Service Area utilized 787 million gallons of potable water for indoor and outdoor needs while 404 million gallons of wastewater were processed by the Water Resource Recovery Facility.

390 tons of Bio-Solids are delivered to Bently Ranch in 2017 for compost use.

*The Public Works Solar Array generated 24 percent of the total electricity consumed by the Public Works Facility in 2017. This tallies a lifetime generation of 360,723 kWh while avoiding an estimated 544,000 pounds of Carbon Dioxide, equivalent to reducing the pollution emitted from 603,311 miles driven by an average passenger vehicle (**epa.gov/energy**).*

Public Works electricity consumption (provided by NV Energy) decreased by 8 percent in 2017 compared to 2009 while cost to NV Energy decreased by 37 percent over the same timeframe.

*According to the Environmental Protection Agency's Portfolio Manager and Carbon Calculator, Public Works operations emitted 2,482 metric tons of carbon dioxide in 2017. This is the equivalent to greenhouse gases emitted by driving an average passenger vehicle 6,068,460 miles (**energystar.gov**).*

The highest recorded surface water temperature during a random sample event was 80 degrees Fahrenheit on June 30, 2017 while the lowest recorded surface water temperature was 34 degrees Fahrenheit on January 24, 2017.

Incline Creek discharge peaked at approximately 70 cubic feet per second in 2017 versus a peak of approximately 17 cubic feet per second in 2016.

Trash callouts are up 88 percent in 2017 compared to 2016 records from 224 to 420 actions taken by the Public Works Solid Waste Technician as a "zero tolerance" trash enforcement was implemented on August 1, 2017.

The 2017 community-recycling rate in Crystal Bay and Incline Village, Nevada is 27.3 percent of total community solid waste to landfill, compared to the 2017 Washoe County recycling rate of 25 percent and the 2017 State of Nevada recycling rate of 21 percent.

104 Household Hazardous Waste Events were held in 2017 serving 1,782 residential customers. 57,886 pounds of Household Hazardous Waste and 55,820 pounds of Electronic Waste were either recycled or properly disposed of.

WORKPLACE CULTURE

Vision Statement

With passion for quality of life and our environment, Incline Village General Improvement District will enhance the reputation of our community as an exceptional place to live, work, invest, and play.

Mission Statement

The Incline Village General Improvement District delivers exemplary recreational experiences and provides the highest level of water, sewer, and solid waste services while striving for fiscal and environmental sustainability.

Value Statement

We are dedicated people providing quality service, for our community and environment, with integrity and teamwork.

Mantra Statement

One District • One Team

Core Values

IVGID employees are encouraged to define their personal core values while applying the following traits in their day to day lives.

- **Service**
  We will use teamwork to provide reliable services and superior value to our customers.
- **Teamwork**
  We will deliver service and value by collaborating with others in a positive work environment to achieve our goals in the best interest of the community.
- **Integrity**
  We will act in an honest, fair, consistent manner to do the right thing for the greatest good.
- **Responsibility**
  We will be professional in our actions, transparent with communication, and accountable to our decisions.
- **Excellence**
  We will perform to the best of our ability and seek to make tomorrow better than today.

SYSTEM PROFILE

Main Function, Core Responsibilities and Services Offered

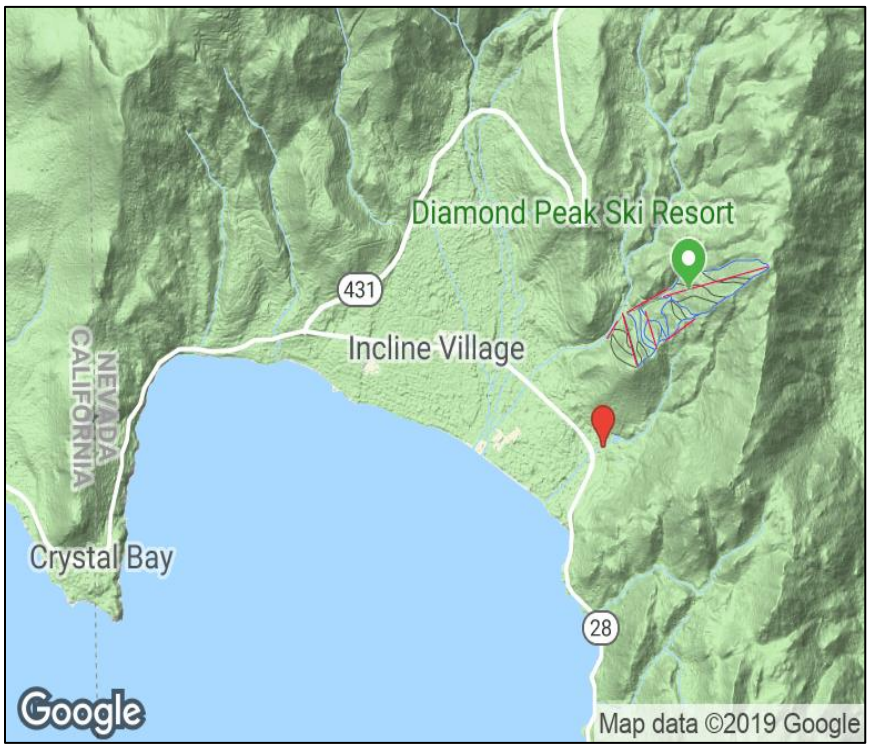
The Department of Public Works provides water and sewer services and manages the Solid Waste Franchise Agreement for the residential and commercial properties of Crystal Bay and Incline Village, Nevada. Public Works also provides engineering, conservation, fleet services, building maintenance, snow removal and BMP maintenance to our internal customers; Golf, Ski, Recreation and Administration. Waste Management, Inc. provides solid waste services through a franchise agreement.

The District is also responsible to its Federal, State and Local regulatory agencies. The production and delivery of safe drinking water and the proper treatment and disposal of wastewater is regulated by the U.S. Environmental Protection Agency and the laws administered by the Nevada Department of Environmental Protection and Washoe County District Health. This responsibility requires substantial reporting to demonstrate compliance with the laws, such as performing laboratory tests, doing system evaluations, having a watershed protection program, inspecting new construction as well as all the traditional activities to deliver water and treat wastewater.

We also serve contractors, developers, and property owners in plan checks, field inspections, backflow surveys, water right analysis, dumpster enclosures, bear boxes, project management (internal), engineering services (internal), water audits, water conservation education, recycling education and household hazardous waste disposal.

The Public Works Facility located at 1220 Sweetwater Road.

Service or Collection Area, Facility Locations and Infrastructure Inventory



The Public Works Facility is comprised of administrative offices, employee break and conference rooms, on-call quarters, storage warehouses, fleet maintenance garages, facility maintenance warehouses, a wash bay, heavy equipment garages, fuel pumping stations, and a hazardous and electronic waste collection area in addition to various open air and closed storage spaces. Regular maintenance and Capital Improvement Projects make infrastructure strong and resilient.

IVGID owns and operates the Burnt Cedar Water Treatment Plant (BCWTP) located on the North Shore of Lake Tahoe. In order to treat and supply an average of 1 Billion Gallons of water annually, Water Infrastructure Assets include:

- A UV and Ozone Treatment Plant able to treat 8.5 MGD.
- 100 Miles of Water Mains between 4-inches to 24-inches in diameter.
- 2,031 Gate Valves.
- 13 Water Tanks with 7 Million Gallons of Storage.
- 14 Water Pumping Stations with 26 Pressure Zones.
- Service connections to over 4,300 Water Meters.
- Total Water Infrastructure Replacement Value: *$275,000,000*

IVGID constructed the Wastewater Resource Recovery Facility (WRRF) in 1962.

Wastewater Infrastructure Assets Include:

- 105 Miles of Gravity Pipelines and 14 Miles of Sewer Force Main between 6-inches to 24-inches in diameter.
- 1,926 Sewer Utility Holes.
- 19 Sewer Pump Stations.
- A wastewater resource recovery facility able to treat 2.1 MGD.
- 20 miles of Effluent Pipeline to Carson Valley for treated effluent water.
- Total Sewer Infrastructure Replacement Value: *$325,000,000*

Important Customers and Stakeholders

The District reads approximately 4,450 meters monthly, billing 4,270 water accounts and 4,170 sewer accounts. Some facilities have multiple water meters such as Championship Golf and some accounts are for water only such as irrigation accounts. The multi-family developments are typically served with one large meter for all the units in that Home Owners Association (HOA).

A detailed customer breakdown is presented below:

- Total Accounts Billed: 4,270
- Total Water Meters Read: 4,450
- Total Irrigation Meters: 89
- Snow Making Meter: 1
- Sewer Only Accounts: 13
- Waste Management directly bills 4,138 residential customers and 275 commercial customers.

Administration Service Teams

- Accounting
- Communications
- General Administration
- Human Resources
- Information Technology
- Risk Management

IVGID Administrative Offices located at 893 Southwood Boulevard.

Public Works Service Teams

- Buildings
- Compliance
- Customer Service
- Engineering
- Fleet
- Pipeline
- Treatment
- Waste Not

Chris and Alfie responding to an emergency.

Scale of the Organization

The IVGID service area is substantially built-out at this point. The Washoe County Assessor parcel database shows that there are approximately 9,060 parcels in the service area with approximately 1,000 parcels owned by the United States and the State of Nevada that are non-buildable. Approximately 7,500 parcels are residential single family and multi-family, 200 parcels are commercial and there are approximately 250 parcels that are undeveloped. The full-time population is estimated below 10,000 people with that number increasing to nearly 20,000 people during peak tourism times in the summer months and winter holidays.

This report strictly examines all Public Works infrastructure, the Public Works Facility (PWF) located at 1220 Sweetwater Road, as well as the IVGID Administrative Office - Anne Vorderbruggen Building (AVB - Admin) located at 893 Southwood Boulevard. Public Works infrastructure includes the Burnt Cedar Water Treatment Plant (BCWTP) located at 665 Lakeshore Boulevard, all water pipeline, water pumps, water reservoirs and associated technology as well as the Water Resource Recovery Facility (WRRF) located at 1250 Sweetwater Road, all sewer pipeline, sewer pumps and manholes.

Unique Requirements for Wastewater Processing at Lake Tahoe

The WRRF is a biological secondary treatment facility with a rated capacity of 2.14 MGD. Wastewater treatment processes include micro-screening, grit removal, carbonaceous activated sludge, secondary clarification, solids dewatering and sodium hypochlorite disinfection of the effluent. There are nineteen sewage pumping stations delivering raw sewage to the WRRF.

The Spooner Pump Station along Highway 28 blends into its surroundings.

IVGID first built a Walker Process Package Treatment Plant (one circular structure with four segments handling the treatment process) in 1962. This treatment plant had a maximum capacity of 0.7 MGD (million gallons per day) with five sewage-pump stations throughout Incline Village delivering wastewater to Sweetwater Road and eventually used on local spray irrigation fields.

The discharge of effluent into Lake Tahoe's waterbody or streams was first prohibited in 1946. A Federal Water Pollution Conference was held in July of 1966 at Lake Tahoe. As a result, all properties are required to have sewer connections and all treated effluent must be exported outside of the Lake Tahoe Basin by 1970 in order to protect Lake Tahoe's water quality and clarity. The Porter Cologne Act and TRPA Compact of 1970 formally prohibit any effluent discharge within the Lake Tahoe Basin.

IVGID met the export requirement in the early 1970s with completion of a twenty-one-mile pipeline that delivered the treatment plant's secondary effluent into the Carson River. The Nevada Department of Environmental Protection mandated more stringent treatment requirements in 1974 in addition to the Safe Drinking Water Act of 1974 and subsequent reauthorization requirements. IVGID completed construction of the Wetlands Enhancement Facility in Carson Valley for the disposal of the treatment plant's effluent in 1984. This project helped IVGID meet all local, state, and federal requirements and provides a waterfowl habitat.

The Wetlands Enhancement Facility located in Carson Valley, NV.

SUSTAINABILITY ACTION PLAN

Management Approach to Sustainability

The community of Crystal Bay and Incline Village, Nevada has been committed to protecting local resources for decades. IVGID has developed a strategic plan to define long-term principles and the means to achieve them. An internal Sustainability Framework has been produced to help guide staff and leadership in achieving sustainability goals and principles.

The IVGID Board of Trustees approved Resolution Number 1836 in 2015 to direct District staff and future policies to consider sustainability and the environment in District operations, policies and planning (Appendix A). Long Range Principle Number One includes protecting the environment as a strategic goal for long term planning within the District (Appendix B). Furthermore, the directive to form a sustainability committee is encouraging the District to engage more staff and community support for related initiatives, policies and programs.

IVGID Public Works is a member of the American Water Works Association (AWWA) and the Water Environment Federation (WEF). Both organizations provide information, insight and tools for public utilities to take advantage of to improve their operations while communicating with other colleagues in the industry. AWWA and WEF both provide supporting tools for using sustainability at water and wastewater utilities. This report primarily relies on background information along with recommendations that are explained in further detail in the WEF publication, *Sustainability Reporting Statements for Wastewater Systems* and the AWWA publication, *The Green utility: A Practical Guide to Sustainability* for sustainability recommendations at a public utility.

Sustainability is not a new subject for small organizations such as Public Works. The American Water Works Association reports that approximately 20% of utilities report having adopted a sustainability vision or plan (Landis, 2015). This report is very important as Public Works continues to document sustainability information and encourages other IVGID venues to benchmark sustainability impacts.

Stakeholder Expectations

The IVGID Sustainability Program is designed to engage the organization regarding sustainability measures specific to local venues while upholding community values in environmental stewardship. The residents and visitors of Crystal Bay-Incline Village are the priority stakeholders within the District. Transparency is valuable to the ratepayers. Local and regional regulators should expect Public Works to be compliant with all current and potential standards while becoming a model for the region.

Tahoe Regional Planning Agency

The Tahoe Regional Planning Agency (TRPA) has established the Lake Tahoe Sustainable Communities Program. This program sets target thresholds for Master Plan areas within the Lake Tahoe Basin to consider while evaluating long-term planning options. It also provides a series of documents to help guide communities within the Lake Tahoe basin develop sustainability frameworks, visions and action plans. Sustainability action planning allows the region to make significant progress in attaining sustainability related goals. Achievement of sustainability related goals helps to protect Lake Tahoe for future generations to enjoy. TRPA's Lake Tahoe Info is an online resource available to the public which tracks an extensive amount of local data through several portals such as the Sustainability Dashboard.

Visit www.laketahoeinfo.org for more information.

Sustainability Dashboard Indicators:

Environment

- Water Quality
- Forest Health and Fire Hazard
- Greenhouse Gas Emissions
- Aquatic Invasive Species

Community

- Healthy Lifestyle
- Transportation
- Housing
- Education

Economy

- Income
- Employment
- Business Environment

IVGID Sustainability Framework

An internal sustainability framework helps organize sustainability efforts and gives staff the necessary tools to achieve sustainability related goals. Four phases divide this framework to facilitate the development and implementation of sustainability initiatives and products. Detailed descriptions of each phase and objectives for those phases are described below.

Sustainability Framework Goals

- Increase staff, resident and visitor participation and awareness in sustainable activities, energy efficiency, waste reduction and recycling activities.
- Review and upgrade District policies and practices to encourage or require waste reduction, recycling and environmentally preferable purchasing.
- Serve as a model for the region to influence waste prevention, recycling, and procurement efforts among other public agencies, businesses, contractors, residents and visitors.

Sustainability Framework Phases

Phase 1

Phase one has been completed. The purpose of phase one was to create a managing body, with strong purpose and internal support as well as defined roles and operations. The result of phase one are the initiatives enumerated below in addition to the sustainability framework. Furthermore, administrative capacity and support is continually allocated.

- ✓ ***Environmental Sustainability Resolution - Resolution #1836***

Resolution number 1836 introduces the subject of environmental sustainability to the community and Board of Trustees. This resolution was passed unanimously by the IVGID Board of Trustees on April 29, 2015. Find this resolution in Appendix A of this document.

- ✓ ***Resources and Environment – Long Range Principle #1***

IVGID revised its Long-Range Principle #1 on resources and the environment to include stronger language on recycling, waste reduction and sustainability with support allocated for defensible space operations and source water protection. The Strategic Plan provides direction and a planned pursuit of the mission, vision, values, long-range principles and objectives and actions of the District from July 1, 2015 to June 30, 2017. This plan was approved by the IVGID Board of Trustees on September 23, 2015 and will be updated for 2018. Find this principle in Appendix B of this document.

- ✓ ***IVGID Sustainability Framework Document***

The Sustainability Framework is designed to instigate a perpetual process within the organization that consistently evaluates sustainability measurements and goals. Reports produced after the initial benchmark assessment will help the community become more resilient to future environmental challenges. Public Works sustainability performance considerations are described in subsequent sections of this report.

Phase 2

The Public Works Annual Sustainability Report helps to complete phase two as an internal assessment of sustainability measurements within the department to create an initial benchmark of data to refer to and build upon in long-term strategies. Phase two is research oriented and is establishing a sustainability management and tracking system based on an initial performance benchmark. The goal of this phase will be to reinforce products and supporting tools developed in the previous phase.

- ✓ ***IVGID Public Works Annual Sustainability Reports – 2016, 2017***
- ✓ ***Diamond Peak Ski Resort Initial Benchmark Assessment, Certification and Progression – Sustainable Tourism Operator's Kit for Evaluation (STOKE-Certified)***

Phase 3

Phase three incorporates the build out of products and supporting tools such as the formation of a sustainability committee to help drive employee and customer guidance in sustainability initiatives. The sustainability committee will be tasked with developing policies that require recycling, waste reduction and purchasing protocols for all facets of the District.

- ***Sustainability Committee and/or Sustainability Ambassador Program***

A committee of selected individual staff members from each department or venue will be tasked to meet at least six times per year to discuss, plan, and develop specific projects, initiatives, and opportunities that will improve the District and its venue's sustainability performance overall.

- ***Sustainable Procurement and Waste Reduction Policy***

The purpose of this initiative is to support and facilitate the purchase of products and services that minimize the harmful effects to the environment from its production, delivery, use and disposition. Therefore, it will be the District's procurement strategy to purchase and use environmentally preferable products whenever they perform satisfactorily and can be acquired at similar total value (cost and quality) within the applicable public purchasing statutes. The Sustainability Committee will review this initiative and the IVGID Board of Trustees will approve the final policy.

Phase 4

Phase four may not be the last phase of the sustainability framework. This phase will have an emphasis on the development and deployment of the sustainability strategy on a longer timeline. Long-term strategies will introduce new initiatives and implement projects that offer solutions to complex and evolving issues while continuing to track progress internally and with outside assistance from certification or assessment entities.

- ***Long-Term Sustainability Strategy***

The purpose of this initiative is to set in place action plans that achieve positive results and recognition for sustainability efforts District-wide. Action plans can address target goals for the years 2020, 2035 and 2050 in reduction of Greenhouse Gas (GHG) emissions and overall energy usage as set by the TRPA.

INDUSTRY BENCHMARKS

Introduction

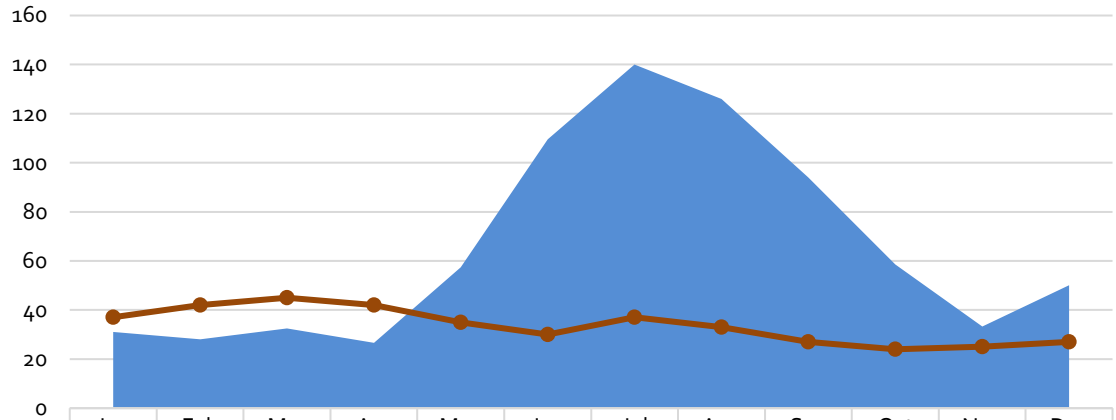
The following parameters are considered "standard" in the water and wastewater treatment industries. These measurements aim to capture basic performance of a utility and can be used in comparison to other utilities. Bio-Solids are typically measured in Metric Tons, Wastewater or Effluent Flows are typically measured in Million Gallons and Water Flow is typically measured in Acre-Feet but have been converted to Million Gallons for the purposes of this report. Compliance, work and customer service orders are simply tallied as the requests are made.

2017 Pulic Works Service Area Water and Wastewater Flows (Million Gallons)

Totals

Water Flow: 786 Million Gallons

Wastewater Flow: 404 Million Gallons



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Water Flow	31	28	32	27	57	109	140	126	94	59	33	50
Wastewater Flow	37	42	45	42	35	30	37	33	27	24	25	27

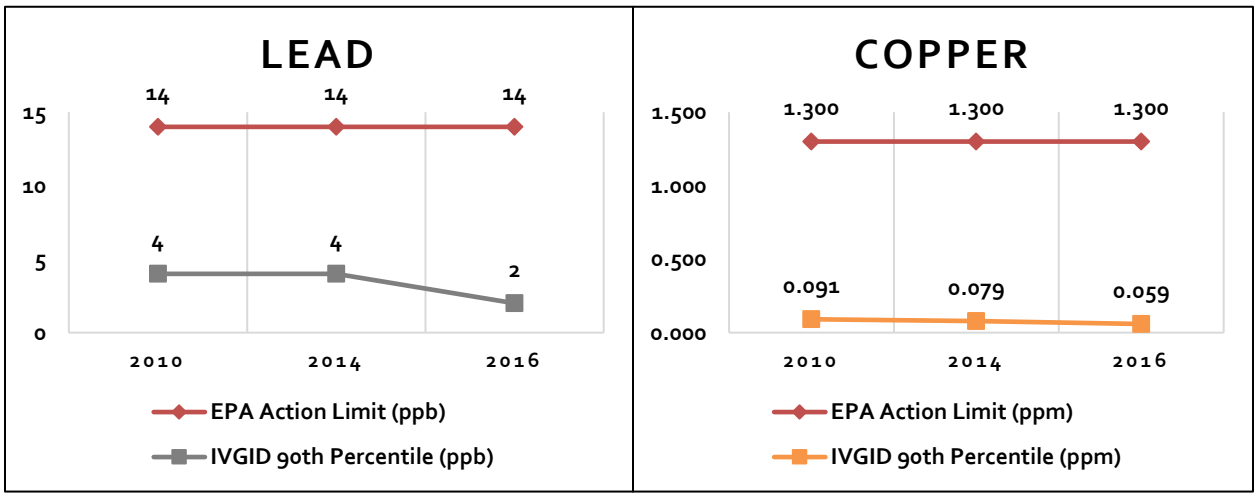
Drink Tahoe Tap ®

Lake Tahoe is a pristine waterbody with unique characteristics that provide the source for exceptional tap water. The United States Environmental Protection Agency considers Lake Tahoe to be an "Outstanding Natural Resource Water, Tier 3" giving the lake the same protective designation as Crater Lake in Oregon and Mono Lake in California. This designation allows the Department of Public Works to operate under a "filtration-exemption status." Five other water purveyors from around the Tahoe Basin whose source of water is Lake Tahoe are also filtration-exempt. The Tahoe Water Suppliers Association (TWSA) helps these agencies comply with state and federal standards while protecting the local quality of water. IVGID is the home agency for the TWSA.

Tahoe Water Suppliers Association
Protect the Source
WWW.TAHOEH2O.ORG

Public Works uses the Lake Tahoe Intake at the Burnt Cedar Water Treatment Plant as its source of water. The type of water source is surface water as opposed to groundwater sources. The water provided is safe and high quality. Tap water provided by Public Works exceeds all national standards. A Consumer Confidence Report (CCR) is issued annually by Public Works to comply with all laws and educate the public about the drinking water supply. It is required to include an explanation of any violations for each calendar year. We are pleased to report to our customers that there were no drinking water violations. There are no additional required health effects notices. Please see the 2017 CCR located online at www.yourtahoeplace.com/public-works for detailed information.

Lead and Copper levels are of high concern to the utility and its customers because of adverse health effects that could occur if there are high concentrations of these heavy metals in drinking water. Typical sources of these metals come from corrosion of household plumbing systems, erosion of natural deposits and leaching from wood preservatives. The graphs below display the IVGID 90th percentile results for Lead and Copper contamination compared to U.S. Environmental Protection Agency "Action Limits" or the concentration of the contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow. The Public Works Team is pleased to report that the drinking water quality is well below the EPA's Action Limits.



One other way to assure consumer confidence is to check that backflow devices are working properly within residents' homes that contain a boiler and/or irrigation system. Backflow devices and annual testing are required by the Nevada State Health Department. These devices provide a mechanical separation between potable and non-potable water, to prevent a backwashing of possibly contaminated water back into the potable water system. This can happen if, for example, there is a sudden drop in water pressure and water sitting in a garden irrigation system gets sucked back into the home's potable water supply. A backflow device would prevent this from happening. Devices that are tested and pass are calculated in statistics that are analyzed later in this section alongside other compliance and customer service figures. IVGID's backflow inspection program is a model used statewide as an example of consumer protection.

Water Flow (Million Gallons)

Water is treated at the Burnt Cedar Water Treatment Facility located at 665 Lakeshore Boulevard. It is pumped through the Crystal Bay and Incline Village service area via pipeline and is stored in reservoirs that have been strategically placed to allow for a gravity-based pressurization system. Water Flows are usually reported in Acre-Feet, but the figures have been converted to Million Gallons for comparison with Effluent Flows which are typically reported in Million Gallons.

Effluent Flows (Million Gallons)

Public Works treats wastewater and ultimately releases it as treated secondary effluent in Carson Valley, Nevada. The Wetlands Enhancement Facility takes most of this flow especially in the winter, but Clear Creek Golf Course and Carson Valley Ranch also use treated effluent in their operations during the summer season. The chart at the bottom of page 20 displays the distribution of effluent as it is split up to the previously mentioned locations. Effluent flow analysis enables Public Works to examine system efficiency compared to other sewage collection systems of similar size or production rate.

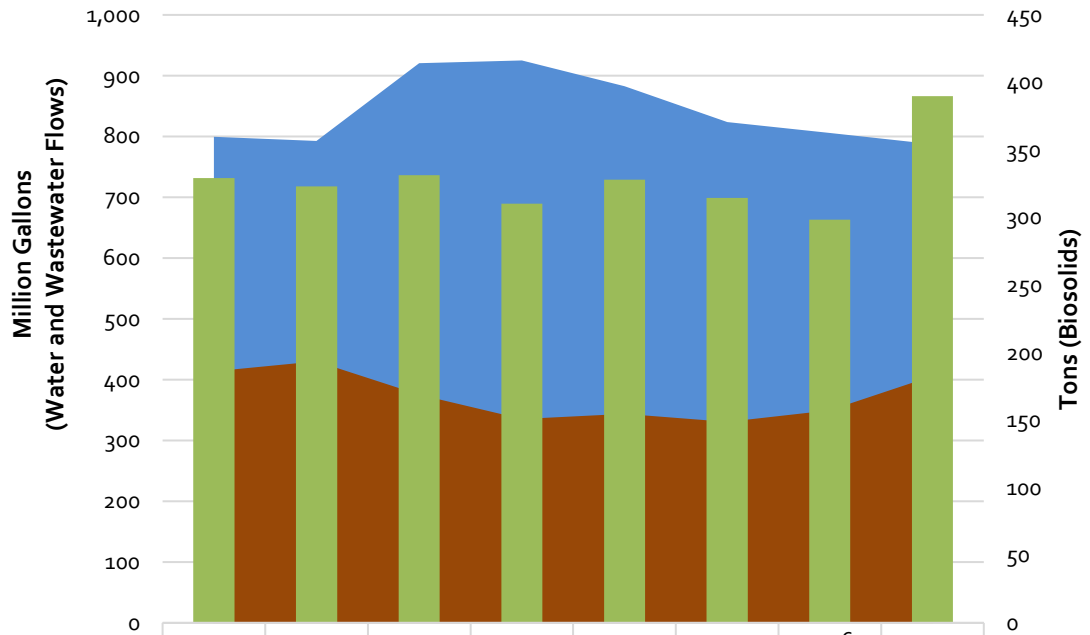
Effluent Treatment Process

Distribution of Bio-Solids at Bently Ranch in Carson Valley, NV.

Bio-solids (Tons)

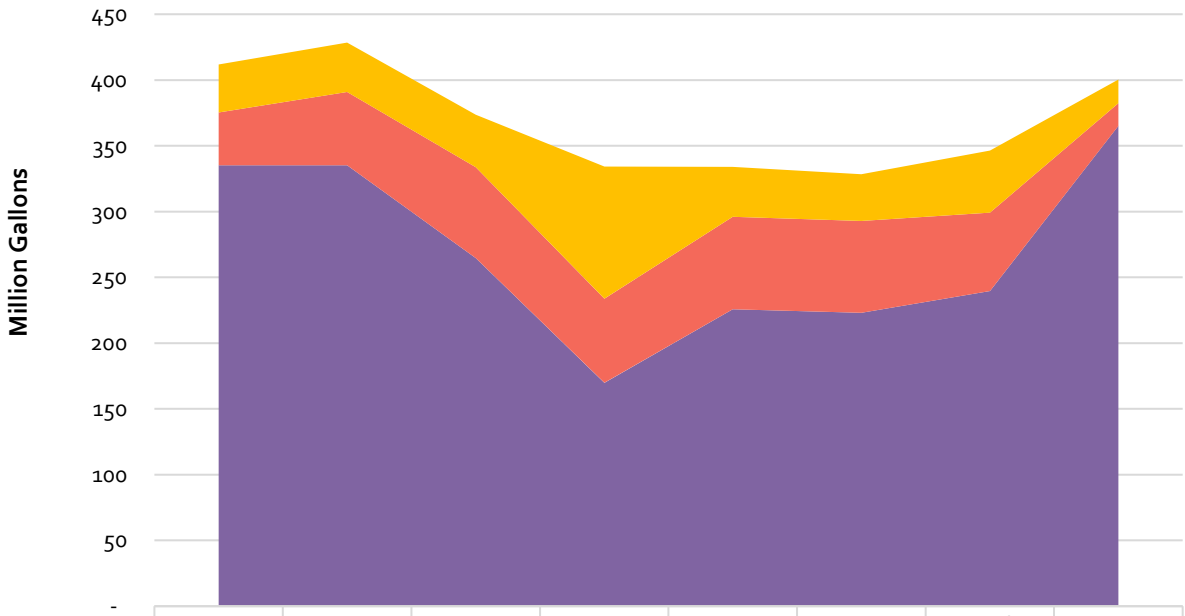
Bio-solids are nutrient rich organic materials produced from wastewater treatment facilities like the one that Public Works operates. Bio-solids can be recycled and applied as fertilizer to improve and maintain productive soils and stimulate plant growth. Effective bio-solids management options help ensure that useful materials are recycled on land at Bently Ranch in Carson Valley, NV and harmful materials are not released to local water bodies.

Water and Effluent Flows (Million Gallons) vs. Bio-solids (Tons)



	2010	2011	2012	2013	2014	2015	2016	2017
Water Flow (Million Gallons)	799	793	920	925	883	824	806	787
Wastewater Flow (Million Gallons)	412	429	374	334	342	329	348	404
Biosolids (Tons)	329	323	331	310	328	315	299	390

WRRF Effluent Flow Splits (Million Gallons)



	2010	2011	2012	2013	2014	2015	2016	2017
Carson Valley Ranch	36	38	40	100	38	35	47	18
Clear Creek Golf Course	40	56	69	64	70	70	59	17
IVGID Wetlands	335	335	265	170	226	223	240	365

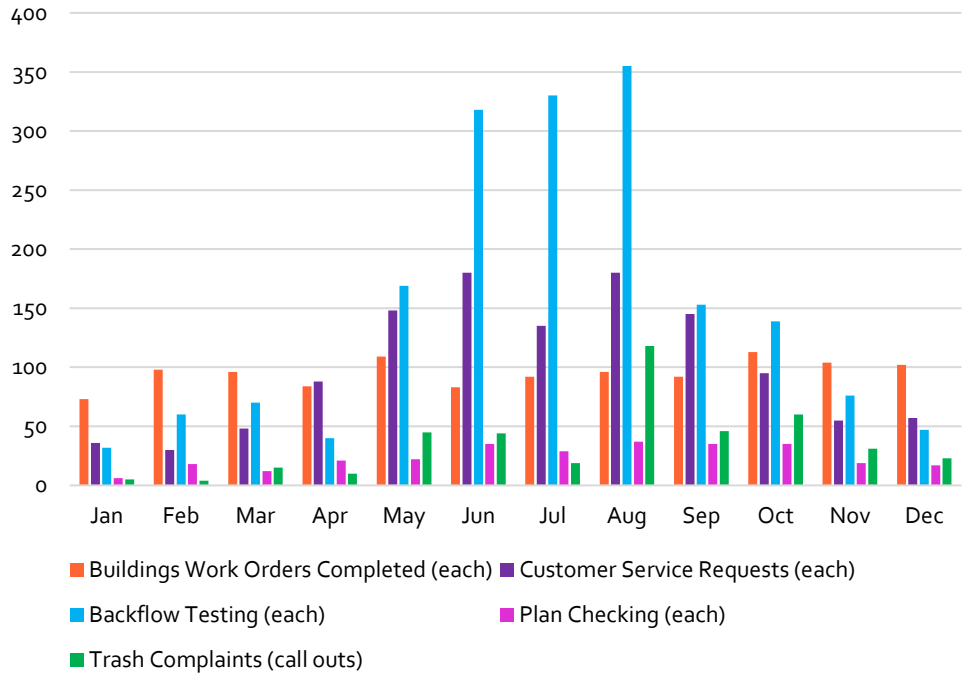
Customer Service and Compliance Duties

Public Works service and compliance responsibilities range from answering customer inquiries to ensuring water is safe to drink by inspecting backflow prevention devices. The buildings division within Public Works responds to requests made by IVGID venues such as Diamond Peak Ski Resort or the Recreation Center. Customer service requests show the annual demand for Public Works services, which average at 1,261 requests per year. The number of plans reviewed by Public Works inspectors is an indicator of how active the construction industry is in this service area. Since 2010, the average number of plans checked has increased on average by 13 percent each year.

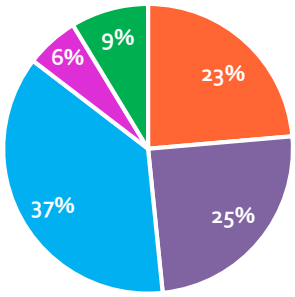
Customer Service Requests	Tally	Year to Year Difference	Year to Year Difference (Percentage)	Difference Compared to 2010	Difference Compared to 2010 (Percentage)
2010	1,125	n/a	n/a	n/a	n/a
2011	1,292	167	14.8%	n/a	n/a
2012	1,237	-55	-4.3%	112	10.0%
2013	1,477	240	19.4%	352	31.3%
2014	1,393	-84	-5.7%	268	23.8%
2015	1,242	-151	-10.8%	117	10.4%
2016	1,124	-118	-9.5%	-1	-0.1%
2017	1,197	73	6.5%	72	6.4%
Average:	***1,261***	***10***	***1.5%***		

Plans Checked	Tally	Year to Year Difference	Year to Year Difference (Percentage)	Difference Compared to 2010	Difference Compared to 2010 (Percentage)
2010	137	n/a	n/a	n/a	n/a
2011	176	39	28.5%	n/a	n/a
2012	166	-10	-5.7%	29	21.2%
2013	281	115	69.3%	144	105.1%
2014	251	-30	-10.7%	114	83.2%
2015	261	10	4.0%	124	90.5%
2016	263	2	0.8%	126	92.0%
2017	286	23	8.7%	149	108.8%
Average:	***228***	***21***	***13.6%***		

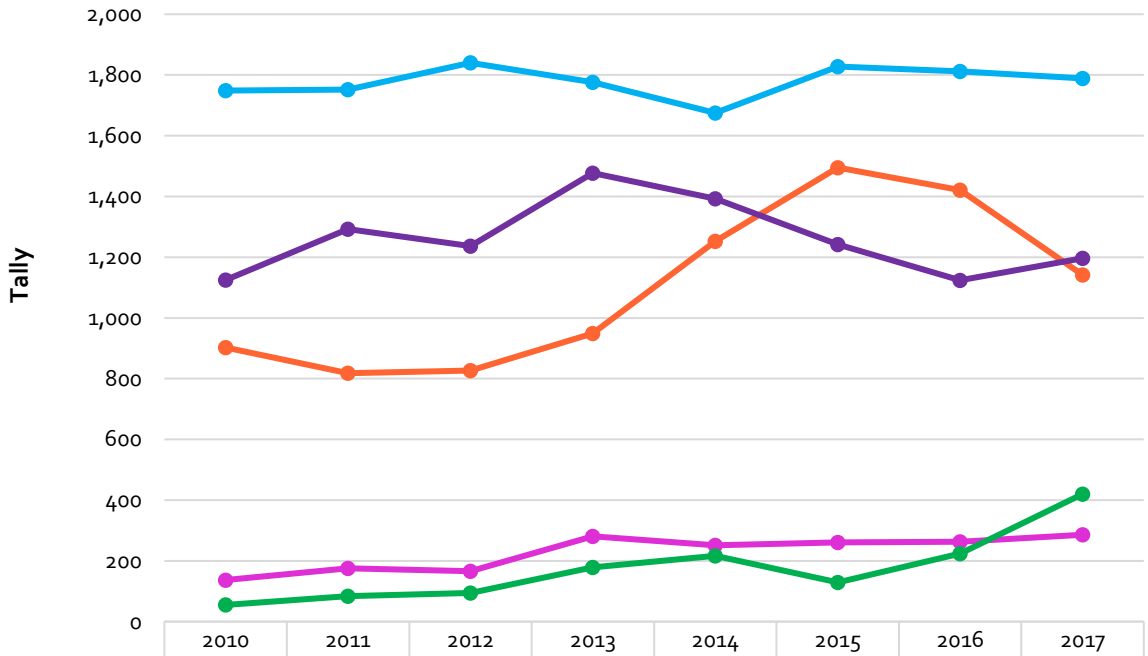
2017 Compliance and Customer Service Statistics



2017



Overall Compliance and Customer Service Statistics



	2010	2011	2012	2013	2014	2015	2016	2017
Plans Checked	137	176	166	281	251	261	263	286
Backflow Tests	1,749	1,752	1,840	1,776	1,675	1,828	1,812	1,789
Trash Callouts	55	84	94	179	217	129	224	420
Buildings Work Orders	903	818	827	949	1,252	1,495	1,421	1,142
Customer Service Requests	1,125	1,292	1,237	1,477	1,393	1,242	1,124	1,197

NATURAL RESOURCE MANAGEMENT

Introduction

The Strategic Plan approved by the IVGID Board of Trustees places "Resources and the Environment" as the first Long Range Principle in a series of defined long-term management principles. The 2015-2017 principle goals are written to encourage all District departments and venues to begin measuring and tracking their sustainability performance and create a mechanism for implementing sustainability related policies and initiatives with staff and community members. Some sustainability related objectives to that policy include funding for defensible space operations, formation of a sustainability committee and to create an environmentally friendly purchasing policy to be approved by the Board of Trustees. Please see Appendix B for a detailed description of this principle and its objectives. This principle applies to all IVGID departments and venues.

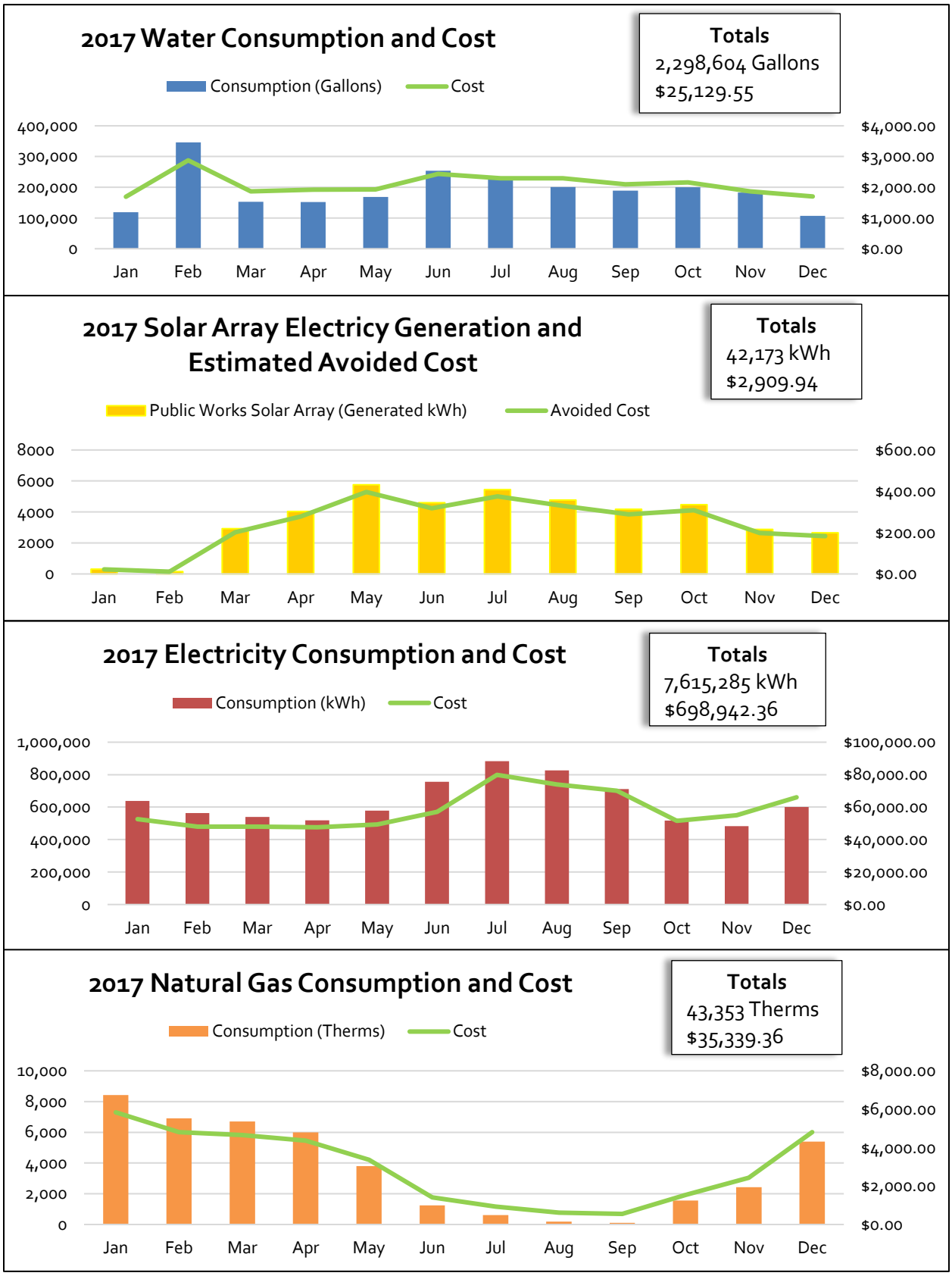
Environmental Considerations

Sustainability metrics within Public Works divisions typically compare standard indicators such as effluent flows and bio-solids generation with resource use such as electricity consumption. The comparison between these indicators allow Public Works to compare our sustainability performance to similar sized utilities. This report is not meant to be a complete inventory of those sustainability indicators, but future reports will at least measure fleet fuel consumption and certain employee statistics as more information is gathered, organized and interpreted. A major sustainability indicator that only begins to scratch the surface in this report are Greenhouse Gas (GHG) Emissions caused by the consumption of natural resources. Greenhouse Gas Emissions include airborne chemicals such as Carbon Dioxide that contribute to global rise in temperatures and changes in climate over time. Methods for estimating Greenhouse Gas Emissions are currently under research for determining the most accurate information at IVGID venues and Public Works. Future reports will track this information in more detail as emissions are inventoried.

Finally, all environmental considerations will be under evaluation in comparison to standards set by the U.S. Environmental Protection Agency, Nevada Department of Environmental Protection, Washoe County, and the Tahoe Regional Planning Agency in addition to any other applicable industry standards. IVGID Public Works' performance on these indicators will help determine goals for reducing emissions in future operations or promoting sustainability initiatives.

Economic Considerations

Economic considerations for Public Works include expenses related to resource use. Basic information regarding the average user as well as environmental compliance spending will be examined in future reports. Detailed financial information for Public Works and IVGID as a whole can be found online at: https://inclinevillagegidnv.opengov.com/transparency

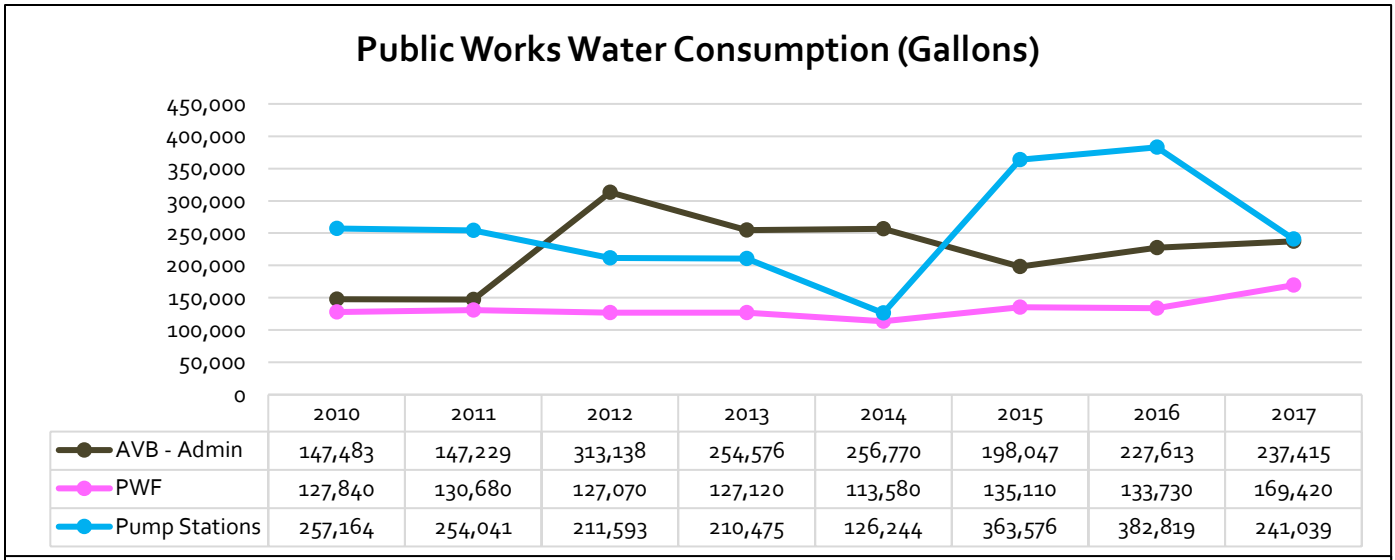

2017 Water Consumption and Cost
Totals
2,298,604 Gallons
$25,129.55
Consumption (Gallons)
Cost
400,000
300,000
200,000
100,000
0
$4,000.00
$3,000.00
$2,000.00
$1,000.00
$0.00
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
2017 Solar Array Electricy Generation and Estimated Avoided Cost
Totals
42,173 kWh
$2,909.94
Public Works Solar Array (Generated kWh)
Avoided Cost
8000
6000
4000
2000
0
$600.00
$400.00
$200.00
$0.00
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
2017 Electricity Consumption and Cost
Totals
7,615,285 kWh
$698,942.36
Consumption (kWh)
Cost
1,000,000
800,000
600,000
400,000
200,000
0
$100,000.00
$80,000.00
$60,000.00
$40,000.00
$20,000.00
$0.00
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
2017 Natural Gas Consumption and Cost
Totals
43,353 Therms
$35,339.36
Consumption (Therms)
Cost
10,000
8,000
6,000
4,000
2,000
0
$8,000.00
$6,000.00
$4,000.00
$2,000.00
$0.00
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

Water

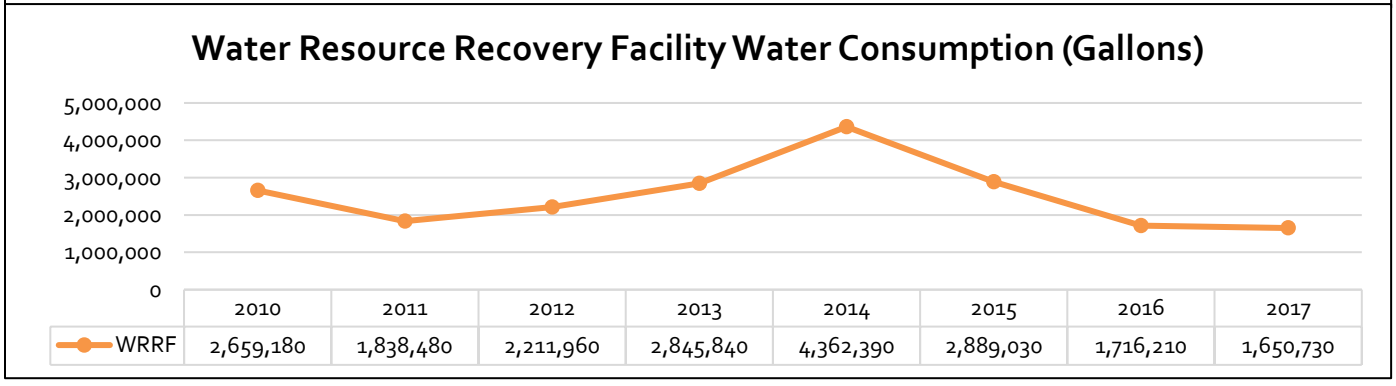
The source of fresh water is an extremely valuable resource. Used to supply public drinking water, Source Water is untreated water from streams, rivers, lakes, or underground aquifers. The source of drinking water for many Tahoe Basin communities, including Crystal Bay and Incline Village, is Lake Tahoe. The water is pumped out the lake, managed in a water treatment facility, and delivered to customers.

Water Consumption

Public Works delivers treated water to its facilities in addition to all other IVGID venues. Water consumption is metered per regulatory code. Public Works has nine water meters at its properties including AVB - Administration, PWF, WRRF as well as various pump stations throughout Crystal Bay and Incline Village. This data reflects all water use for Public Works operations and does not include any data from irrigation systems or other IVGID venues such as Diamond Peak Ski Resort, Incline Village Golf facilities or Parks and Recreation operations. Water consumption by Public Works has decreased over the past five years. Various improvements to infrastructure at district facilities has allowed regular operations to continue while increasing water-use efficiency. Capital improvement projects on the premises at the WRRF caused a spike in water use from 2013 to 2015. Average water use for the WRRF is typically between 1.5 to 2 million gallons of consumption per year.



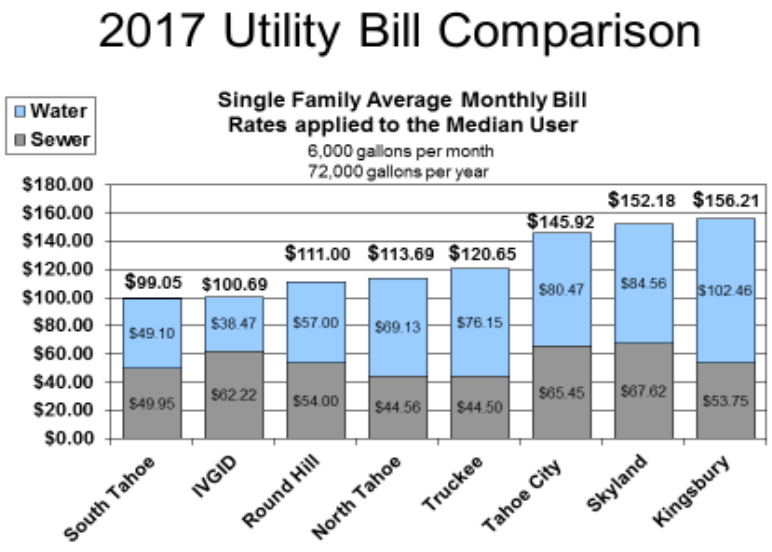
	2010	2011	2012	2013	2014	2015	2016	2017
AVB - Admin	147,483	147,229	313,138	254,576	256,770	198,047	227,613	237,415
PWF	127,840	130,680	127,070	127,120	113,580	135,110	133,730	169,420
Pump Stations	257,164	254,041	211,593	210,475	126,244	363,576	382,819	241,039



	2010	2011	2012	2013	2014	2015	2016	2017
WRRF	2,659,180	1,838,480	2,211,960	2,845,840	4,362,390	2,889,030	1,716,210	1,650,730

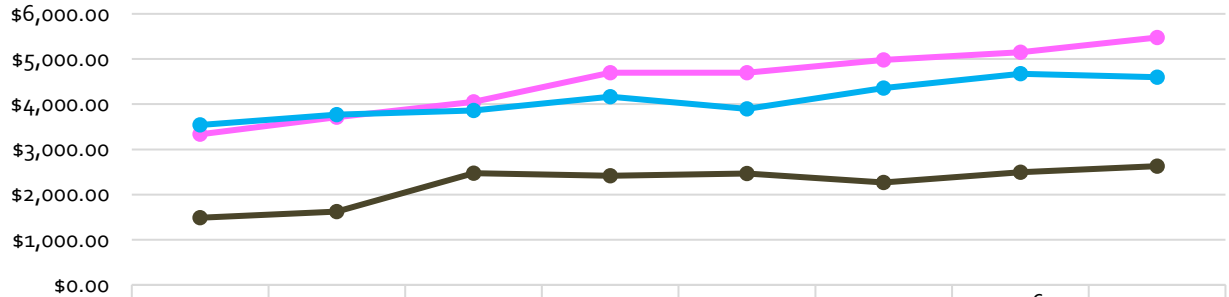
Water Cost

Public Works bills all water meters including meters used by IVGID operations. The chart below represents the total water consumption cost for all nine water meters that Public Works uses, but do not include water consumption cost for any irrigation systems, Diamond Peak Ski Resort, Incline Village Golf Facilities, or Parks and Recreation operations.



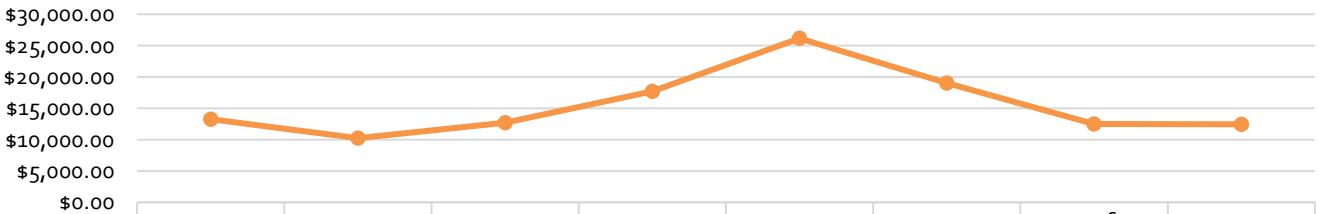
Water rates have gradually increased since 2010. The 2017 utility bill comparison details the single-family average monthly bill rates as it is applied to the median District user. The cost of water consumption as displayed in the charts below depict the rate as it is seen by all water users on their monthly bill for any given property. This includes base charges, capital improvement costs, administration fees and use for water and sewer services in addition to defensible space funding.

Cost of Public Works Water Consumption



	2010	2011	2012	2013	2014	2015	2016	2017
AVB - Admin	$1,486.88	$1,620.04	$2,474.01	$2,415.49	$2,467.47	$2,267.06	$2,491.19	$2,628.44
PWF	$3,333.71	$3,712.66	$4,054.50	$4,700.48	$4,695.26	$4,980.49	$5,148.49	$5,476.21
Pump Stations	$3,540.27	$3,770.07	$3,860.34	$4,169.04	$3,893.65	$4,356.98	$4,673.07	$4,601.31

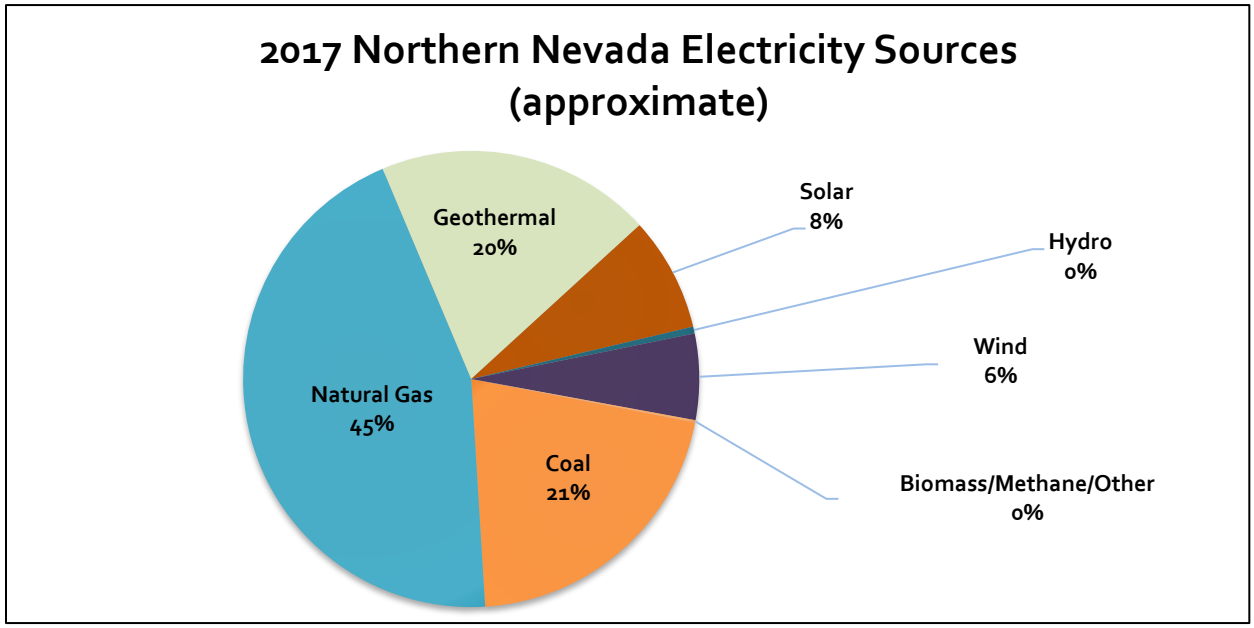
Cost of Water Consumption at the Water Resource Recovery Facility

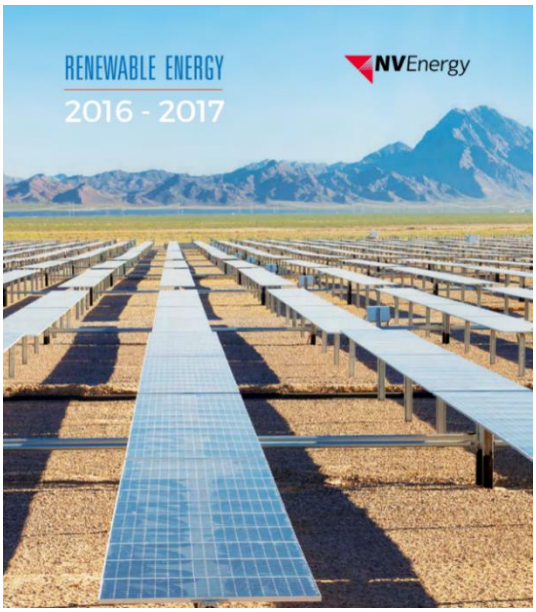


	2010	2011	2012	2013	2014	2015	2016	2017
WRRF	$13,244.21	$10,233.28	$12,705.50	$17,705.93	$26,155.17	$19,013.91	$12,488.92	$12,423.59

Electricity

NV Energy provides electricity to Crystal Bay and Incline Village. It is nearly impossible to track an electron once it is created because electricity grids are tied together. However, local transmission lines extend to the nearest regional sub-station in Carson City. NV Energy provides information regarding their generation station's and overall grid's portfolio in Northern Nevada, which is broken down by the pie chart below. (nvenergy.com/about-nvenergy/our-company/power-supply).





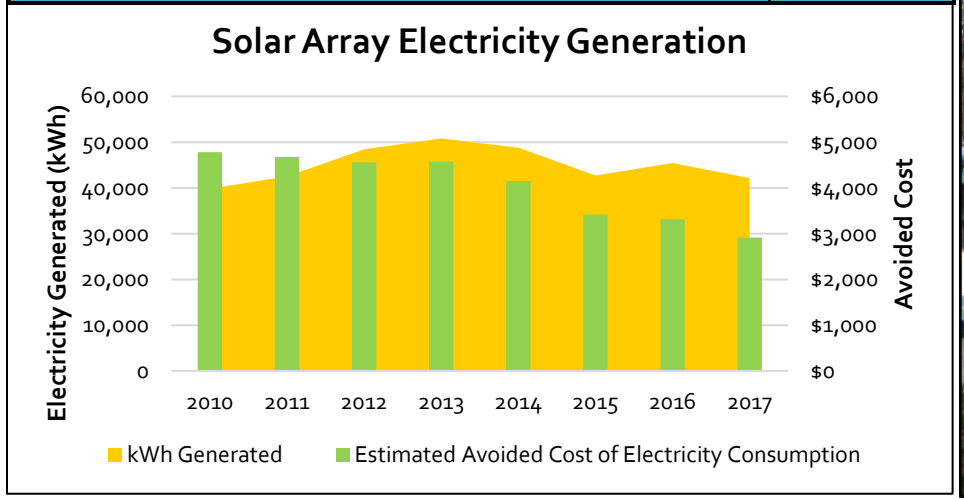
Most of the electricity generated in Northern Nevada comes from natural gas generation stations and combustion turbines that can produce at least 1,000 megawatts of electricity. North Valmy Generating Station in north central Nevada can produce 522 megawatts during summer peak capacity using coal. Geothermal hotspots provide the other most common sources of electricity in the state. Additional solar power generation stations are currenlty being built in Nevada which will reduce the greenhouse gas emissions currently being emitted by the electricty grid. Northern Nevada electricity sources as it is defined in this report includes all generators north of the One Nevada Transmission Line which connects the electricity grid from Ely to Las Vegas. Fossil Fuels encompass approximately two thirds of the electricity generation in Northern Nevada for 2017, leaving only a third of electricity generation to renewable energy projects. NV Energy offers several programs and incentives to promote renewable energy project advancement and installation of energy storage solutions for critical infrastructure.

Solar Array Electricity Generation

The installation of one hundred fifty solar-photovoltaic 205-watt panels on the roof of the Public Works Facility took place in January 2010. Public Works owns one of the largest solar arrays in Incline Village, NV including 2540 sq. ft. of solar panel surface. This electricity generation provides approximately 25% of the power need for the building's daytime operations. This system functions without battery storage. It is a grid-tied system so any excess energy produced is returned to the main electrical grid via reverse metering. The approximate cost of this project was $306,000 with $171,000 funded by District capital and $135,000 funded by NV Energy's Solar Generations Program Rebate. The estimated lifetime return on direct investment is approximately $30,000 or at least 10% return for total value and approximately 20% return for District capital fund value. Additional project benefits include an estimated 34 metric tons or 68,000 pounds of Carbon Dioxide emissions that are avoided annually. Over 500,000 pounds of Carbon Dioxide emissions into our atmosphere have been avoided since this project was installed.

	2010	2011	2012	2013	2014	2015	2016	2017
kWh Generated	39,844	42,504	48,454	50,803	48,814	42,733	45,398	42,173
Percent of PWF Total kWh Consumption	23%	29%	32%	33%	34%	25%	27%	24%
Estimated Avoided Cost of Electricity Consumption	$4,781	$4,675	$4,555	$4,572	$4,149	$3,419	$3,314	$2,910

Lifetime Electricity Generation (kWh):	**360,723**
Estimated Lifetime Return on Investment:	**$32,375**
Estimated Lifetime CO2 Avoidance (lbs.):	**544,000**



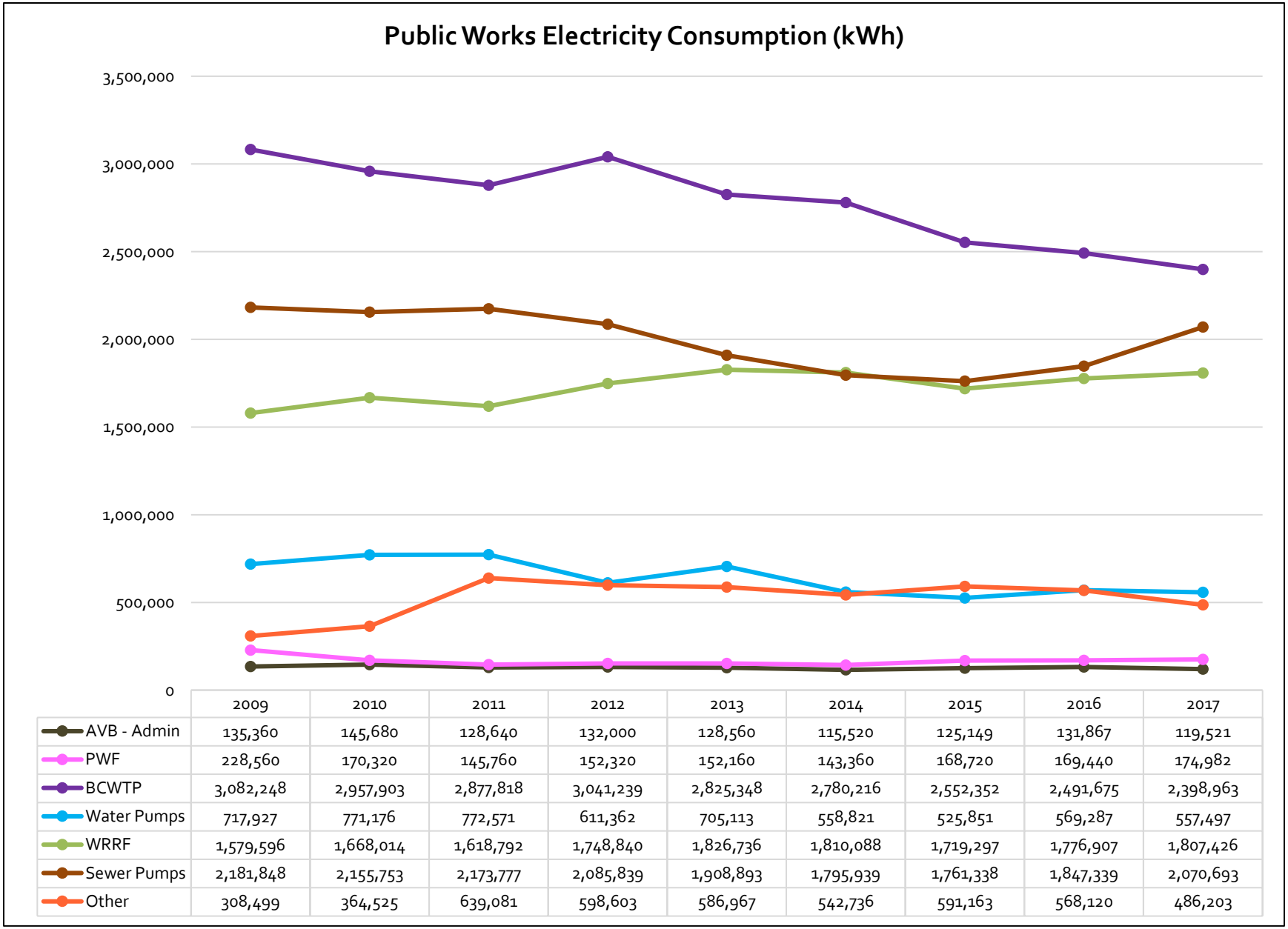
Electricity Consumption

Crystal Bay and Incline Village receives electricity service from NV Energy whose power sources in Northern Nevada include a mix of coal, natural gas and renewable electricity generation stations. IVGID does not currently participate in a Renewable Energy Credit (REC) program or any other similar programs. Rooftop solar in the Lake Tahoe Basin can be difficult to achieve with local regulations, but the PWF does have a small solar array installed on its roof.

NV Energy collects the most accurate electricity data and readily available records go back to 2009. Overall electricity consumption is measured in kilo-watt-hours (kWh) and has shown a decreasing trend since then. New equipment upgrades and revised operational procedures may be contributing to this trend. Public Works electricity consumption was reduced by over 750,000 kWh in 2017 compared to 2009. On average, Public Works electricity consumption has decreased by approximately 77,000 kWh per year since 2009. However, consumption over the past two years has been on a rising trend.

Electricity Consumption	kWh	Year to Year Difference (kWh)	Year to Year Difference (Percentage)	Difference Compared to 2009 (kWh)	Difference Compared to 2009 (Percentage)
2009	8,234,038	n/a	n/a	n/a	n/a
2010	8,233,371	-667	-0.01%	n/a	n/a
2011	8,356,439	123,068	1.5%	122,401	1.5%
2012	8,370,203	13,764	0.2%	136,165	1.7%
2013	8,133,777	-236,426	-2.8%	-100,261	-1.2%
2014	7,746,680	-387,097	-4.8%	-487,358	-5.9%
2015	7,443,870	-302,810	-3.9%	-790,168	-9.6%
2016	7,554,635	110,765	1.5%	-679,403	-8.3%
2017	7,615,285	60,650	0.8%	-618,086	-7.5%
Average:	***7,965,366***	***-77,344***	***-0.9%***		

Public Works has 36 electrical meters including at water and wastewater pumps, the BCWTP, WRRF, PWF and AVB - Admin. The "Other" category listed in the graph tables on the next page includes electricity consumption that is metered at various water reservoirs and at the Wetlands Enhancement Facility. These meters do not include electricity consumption for Diamond Peak Ski Resort, Incline Village Golf Facilities, or Parks and Recreation operations.



	2009	2010	2011	2012	2013	2014	2015	2016	2017
AVB - Admin	135,360	145,680	128,640	132,000	128,560	115,520	125,149	131,867	119,521
PWF	228,560	170,320	145,760	152,320	152,160	143,360	168,720	169,440	174,982
BCWTP	3,082,248	2,957,903	2,877,818	3,041,239	2,825,348	2,780,216	2,552,352	2,491,675	2,398,963
Water Pumps	717,927	771,176	772,571	611,362	705,113	558,821	525,851	569,287	557,497
WRRF	1,579,596	1,668,014	1,618,792	1,748,840	1,826,736	1,810,088	1,719,297	1,776,907	1,807,426
Sewer Pumps	2,181,848	2,155,753	2,173,777	2,085,839	1,908,893	1,795,939	1,761,338	1,847,339	2,070,693
Other	308,499	364,525	639,081	598,603	586,967	542,736	591,163	568,120	486,203

Electricity Cost

Improvements to local energy infrastructure under NV Energy's management has affected electricity rates. While electricity consumption is going down for Public Works operations so are electricity rates. The table depicting the NV Energy Rate Schedule is an example of electrical rate decrease for most meters associated with Public Works operations. A decrease in electricity rates allows the District to be more cost-efficient per kilo-Watt-hour (kWh) in performing regular duties across all venues.

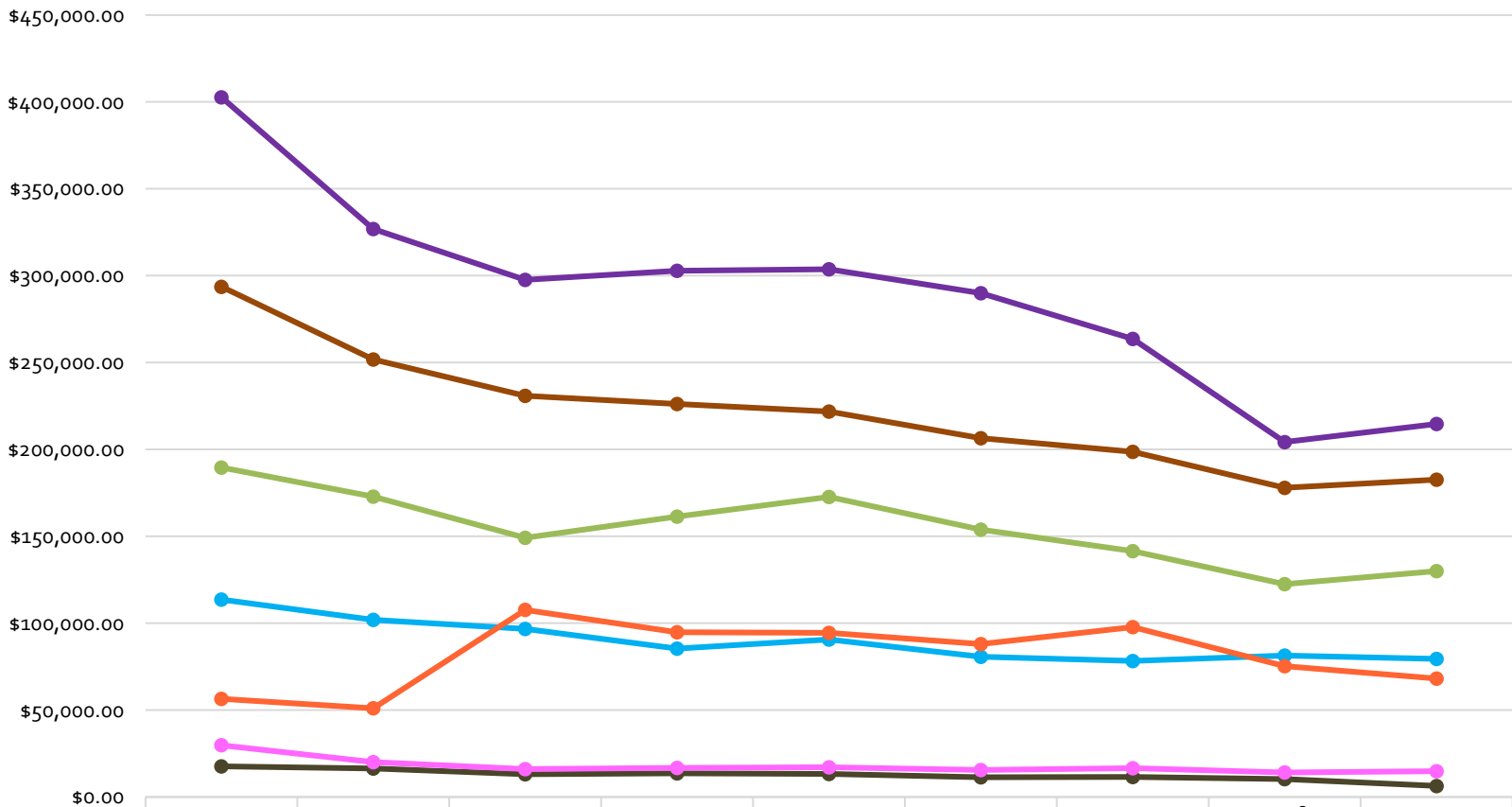
NV Energy Rate Schedule			
	2009	**2012**	**2017**
NEV_GS1 = General Service (less than 10,000 kWh/month)	$0.129 per kWh	$0.094 per kWh	$0.069 per kWh

The cost to NV Energy in 2017 was $245,000 less expensive than it was in 2009. Electricity consumption at Public Works has decreased by approximately 7.5% since 2009 while the electricity cost has decreased by approximately 37% over the same time. On average, Public Works electricity cost has been reduced by nearly $50,000 per year since 2009.

Electricity Cost	American Dollars	Year to Year Difference	Year to Year Difference (Percentage)	Difference Compared to 2009	Difference Compared to 2009 (Percentage)
2009	$1,103,472.01	n/a	n/a	n/a	n/a
2010	$941,096.71	-$162,375.30	-14.7%	n/a	n/a
2011	$911,277.41	-$29,819.30	-3.2%	-$192,194.60	-17.4%
2012	$900,949.96	-$10,327.45	-1.1%	-$202,522.05	-18.4%
2013	$913,535.40	$12,585.44	1.4%	-$189,936.61	-17.2%
2014	$845,993.22	-$67,542.18	-7.4%	-$257,478.79	-23.3%
2015	$808,333.93	-$37,659.29	-4.5%	-$295,138.08	-26.7%
2016	$685,709.59	-$122,624.34	-15.2%	-$417,762.42	-37.9%
2017	$696,032.42	$10,322.83	1.5%	-$245,064.29	-36.9%
Average:	***$867,377.85***	***-$50,929.95***	***-5.4%***		

The graph and table on the next page display the electricity cost to Public Works over the same period as measured by the electricity consumption data in the previous section. The "Other" category listed in the graph tables on the next page includes electricity consumption that is metered at various water reservoirs and at the Wetlands Enhancement Facility. These meters do not include electricity consumption for Diamond Peak Ski Resort, Incline Village Golf Facilities, or Parks and Recreation operations.

Cost of Public Works Electricity Consumption

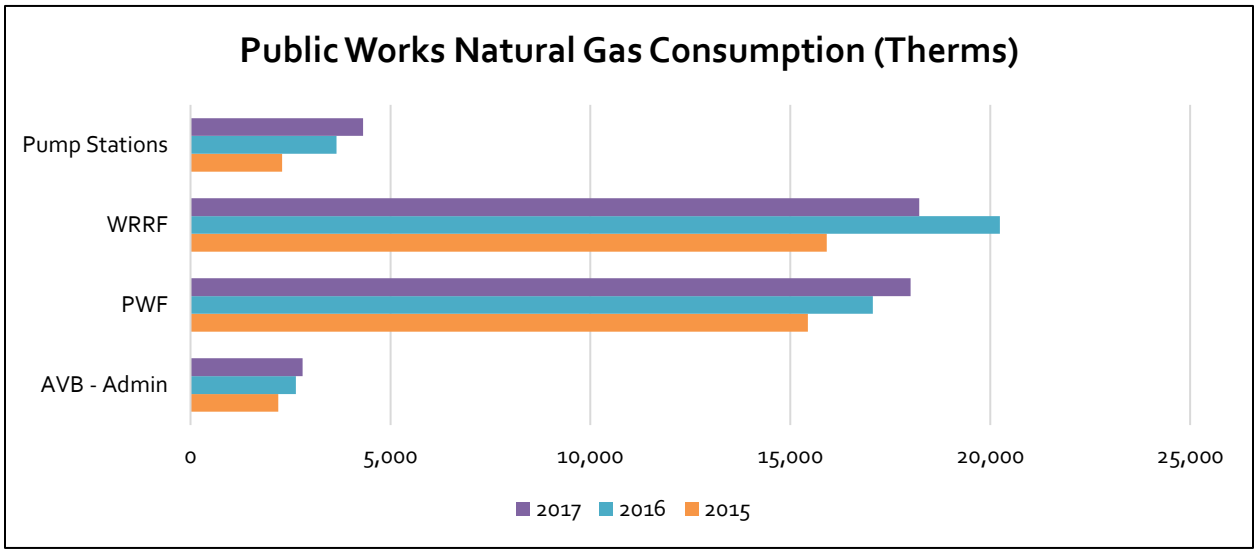


	2009	2010	2011	2012	2013	2014	2015	2016	2017
AVB - Admin	$17,644.65	$16,426.18	$13,082.10	$13,628.64	$13,225.95	$11,374.22	$11,569.17	$10,304.37	$6,386.22
PWF	$29,769.72	$20,048.82	$16,142.16	$16,808.34	$17,048.41	$15,565.33	$16,647.40	$14,103.11	$14,798.11
BCWTP	$402,719.93	$326,872.67	$297,535.73	$302,869.71	$303,793.08	$289,927.17	$263,699.99	$204,288.78	$214,644.23
Water Pumps	$113,605.92	$101,994.98	$96,815.15	$85,399.62	$90,624.80	$80,742.96	$78,298.41	$81,339.04	$79,429.41
WRRF	$189,624.99	$172,849.83	$149,180.43	$161,333.29	$172,618.32	$153,933.12	$141,572.55	$122,483.96	$129,931.96
Sewer Pumps	$293,675.42	$251,862.37	$230,880.89	$226,158.27	$221,770.29	$206,441.41	$198,685.96	$177,962.13	$182,623.71
Other	$56,431.38	$51,041.86	$107,640.95	$94,752.09	$94,454.55	$88,009.01	$97,860.45	$75,228.20	$68,218.78

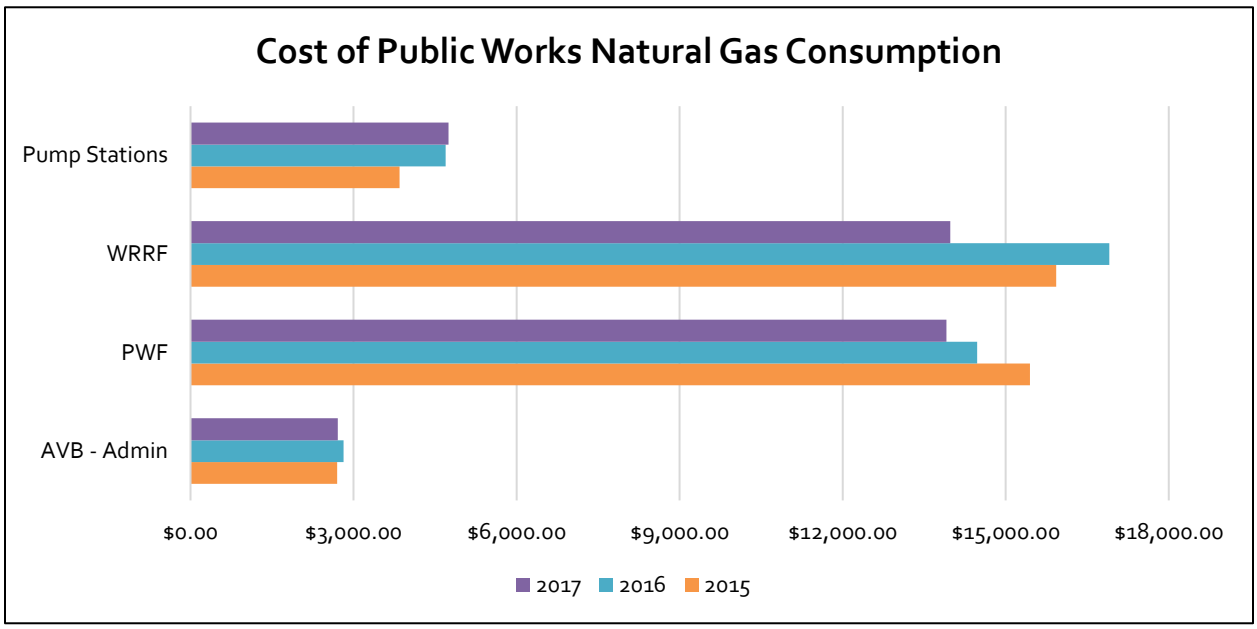
Natural Gas

Natural Gas is provided to our area by Southwest Gas Corporation (SGC), which is a subsidiary of Southwest Gas Holdings, INC. SGC provides energy to more than 2 million customers in Arizona, Nevada, and parts of California. SGC states "As an abundant source pf energy, natural gas is an American foundation fuel, helping to increase our energy security. We believe that developing clean natural gas energy sources is critical to reducing greenhouse gas emissions, and providing an affordable and sustainable energy blend." The Public Works Facility and the WRRF use the most amount of natural gas primarily for heating purposes. Public Works facilities have seven natural gas meters at its properties including the IVGID Administrative Offices.

Natural Gas Consumption



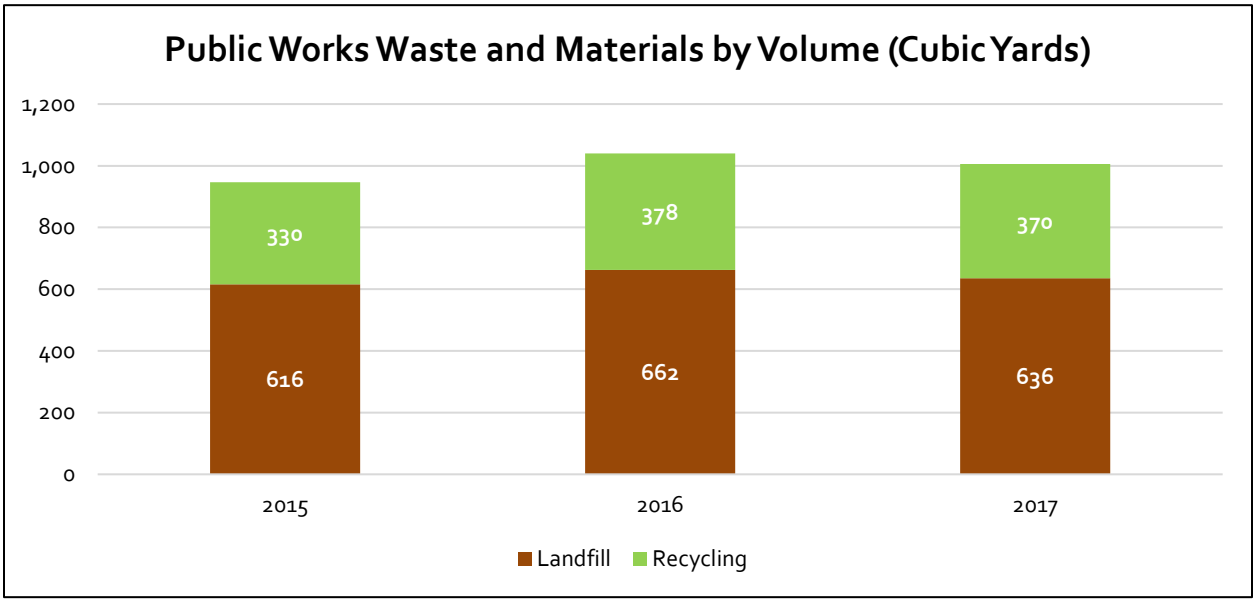
Natural Gas Cost



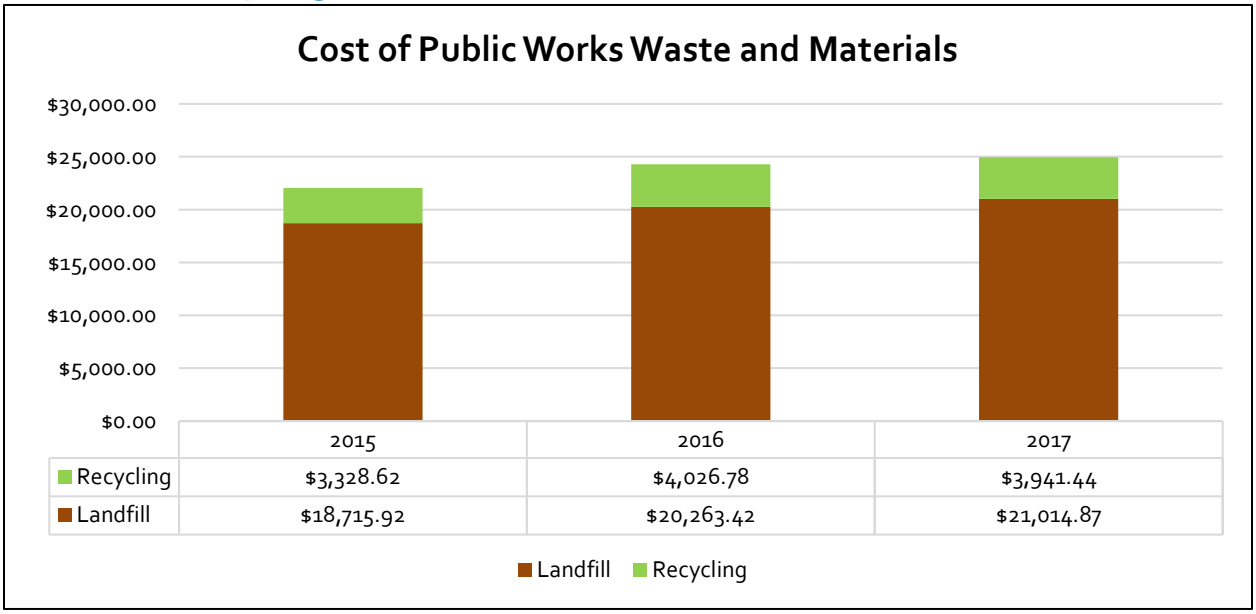
Waste and Materials

Landfill and recycling services are offered to the District by Waste Management, Inc. Public Works produces typical solid waste along with grit from the WRRF as well as occasional special project waste and hazardous waste. Public Works operations generate approximately 1,000 cubic yards of waste and materials per year. Recyclable materials made up 37% of the total waste generated by Public Works in 2017, yet the cost of recycling only accounts for 16% of the total bill. Public Works has three landfill dumpsters, three recycling dumpsters and three dumpsters for special materials or events. Hazardous materials are managed as they are produced in accordance with all local, state and federal regulations.

Landfill Diversion Efforts



Landfill and Recycling Cost



GREENHOUSE GAS EMISSIONS

Introduction

Greenhouse gases are types of gases that exist in the Earth's atmosphere, like water vapor, carbon dioxide and methane. Many scientific findings show that practices like fuel use, raising cattle, and factory production have caused the release of a lot more greenhouse gases than our planet is used to having in its atmosphere. Too much of the sun's heat is being trapped by the increased levels of these gases, which leads to warmer temperatures and changes in climate.

The Environmental Protection Agency provides several online tools that can help determine greenhouse gas emissions. The Energy Star Portfolio Manager is free to use for any size organization and can even be utilized for residential properties. The Greenhouse Gas Equivalencies Calculator can turn those emissions numbers into relatable information for most people. The tools allow the user to upload information regarding natural resource consumption so that emissions analysis can be estimated. Natural resource information is found by reviewing previous utility bills or inquiring the user's utility services for historical records for a given account.

The estimated greenhouse gas emissions for Public Works operations based on information included in this report resulted in 2,482 metric tons of carbon dioxide emitted into the atmosphere during 2017. This is not inclusive of all available data that influence emission data at Public Works. Further analysis of fleet information is needed to determine a more accurate approximation of emissions.

ENERGY STAR® Portfolio Manager®

Metrics Summary

Metric	Dec 2016 (Other)	Dec 2017 (Other)	Change
Total GHG Emissions (Metric Tons CO2e)	2,463.9	2,481.6	17.70 (0.70%)
Total GHG Emissions Intensity (kgCO2e/ft²)	616.0	620.4	4.40 (0.70%)

Greenhouse Gas Equivalencies

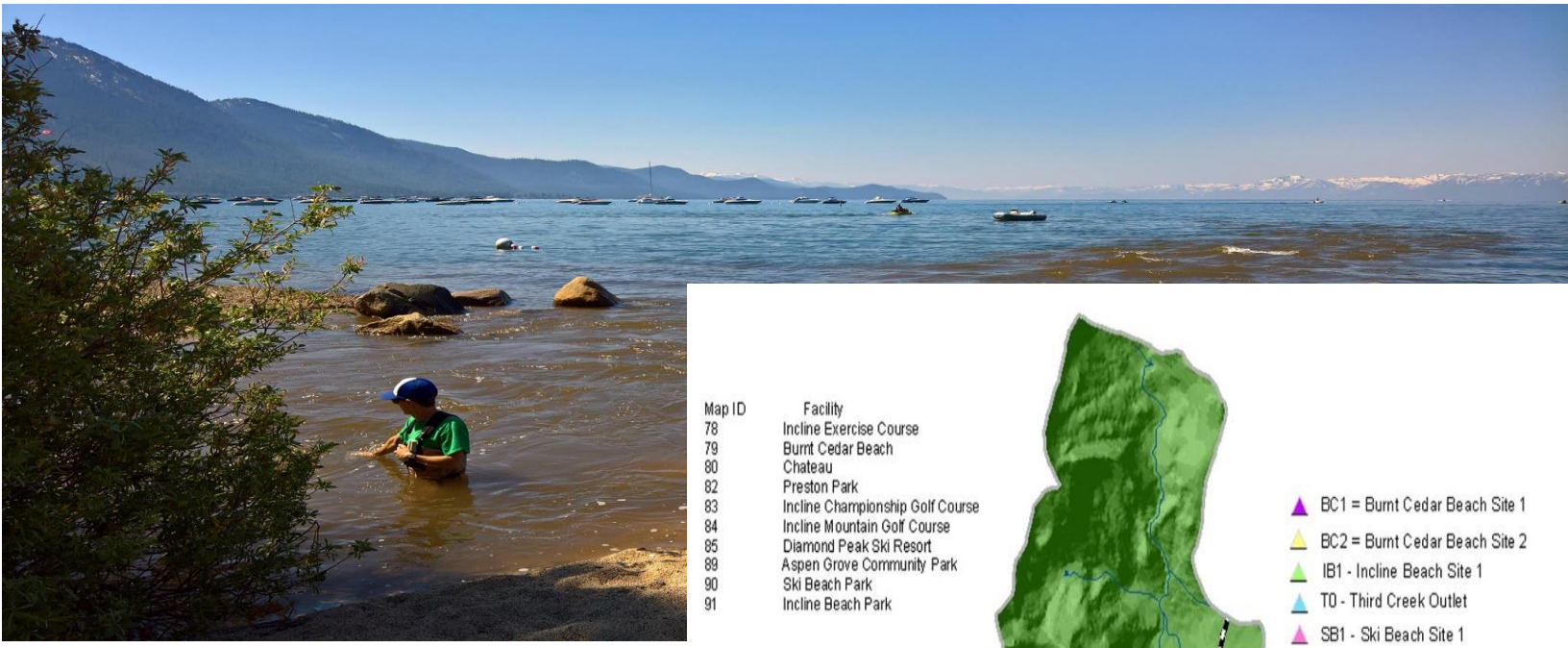
Greenhouse Gas Equivalencies Calculator

2,482 metric tons of carbon dioxide are equal to:

Greenhouse gas emissions from 527 passenger vehicles driven for one year or 6,068,460 miles driven by an average passenger vehicle.

Carbon dioxide emissions from 297 homes' energy use for one year or 433 homes' electricity use for one year.

Carbon dioxide emissions from 316,485,574 smartphones charged.



ENVIRONMENTAL QUALITY

Site Monitoring

One way of protecting local water quality is to monitor and consistently observe the environment for any changes over time. The Waste Not Program facilitates six water quality samples from IVGID owned properties to help build a databank for our natural resource. Staff has been monitoring and recording water quality data at Burnt Cedar Beach and Jetty, Incline Beach, Ski Beach, Third Creek and Incline Creek since 2004. Beach-site water quality parameters include general observations, temperature, turbidity, total coliform and fecal coliform. Dissolved Oxygen (DO) and Total Dissolved Solids (TDS) are measured at creek-sites in addition to beach-site parameters.

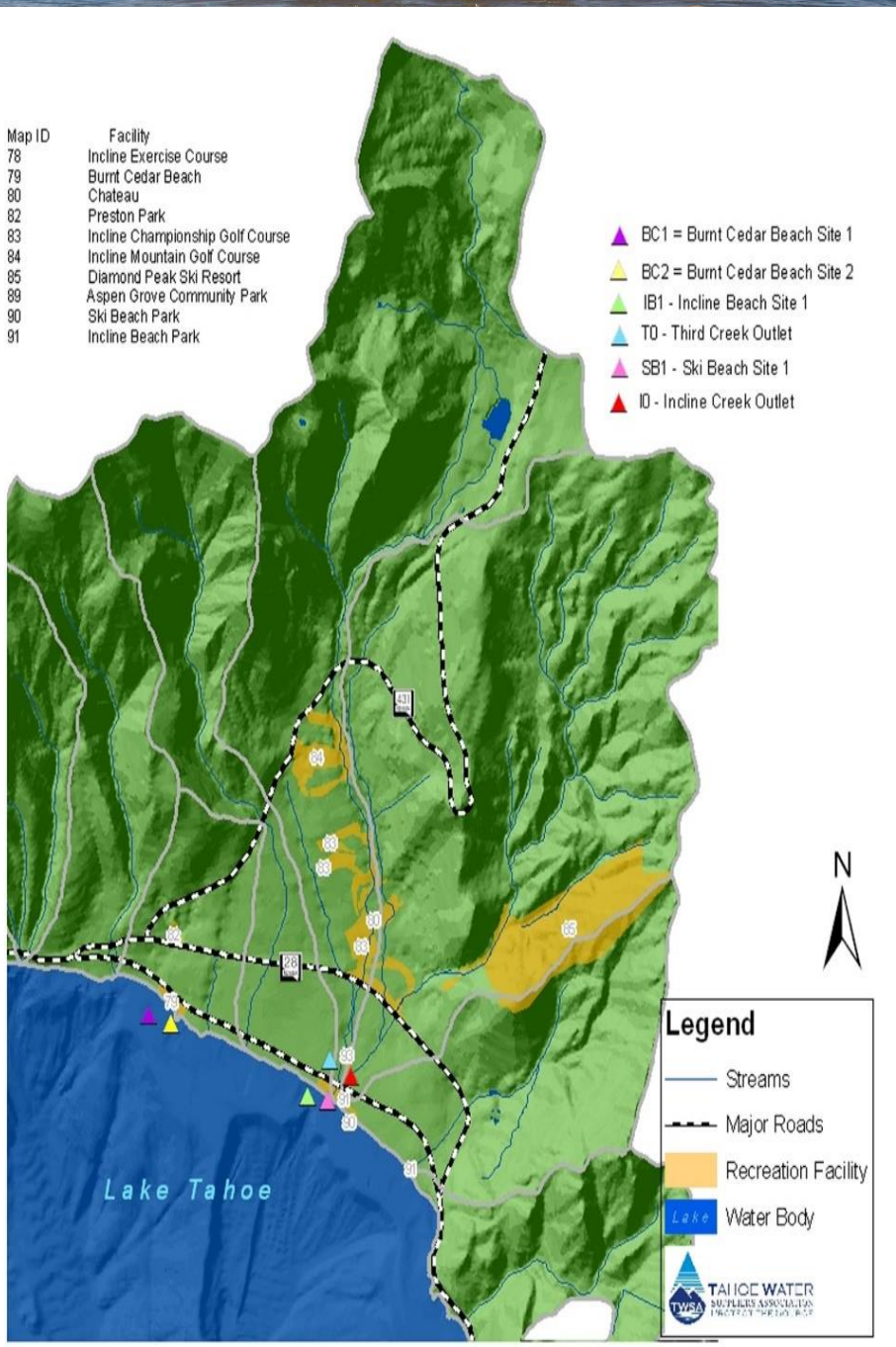
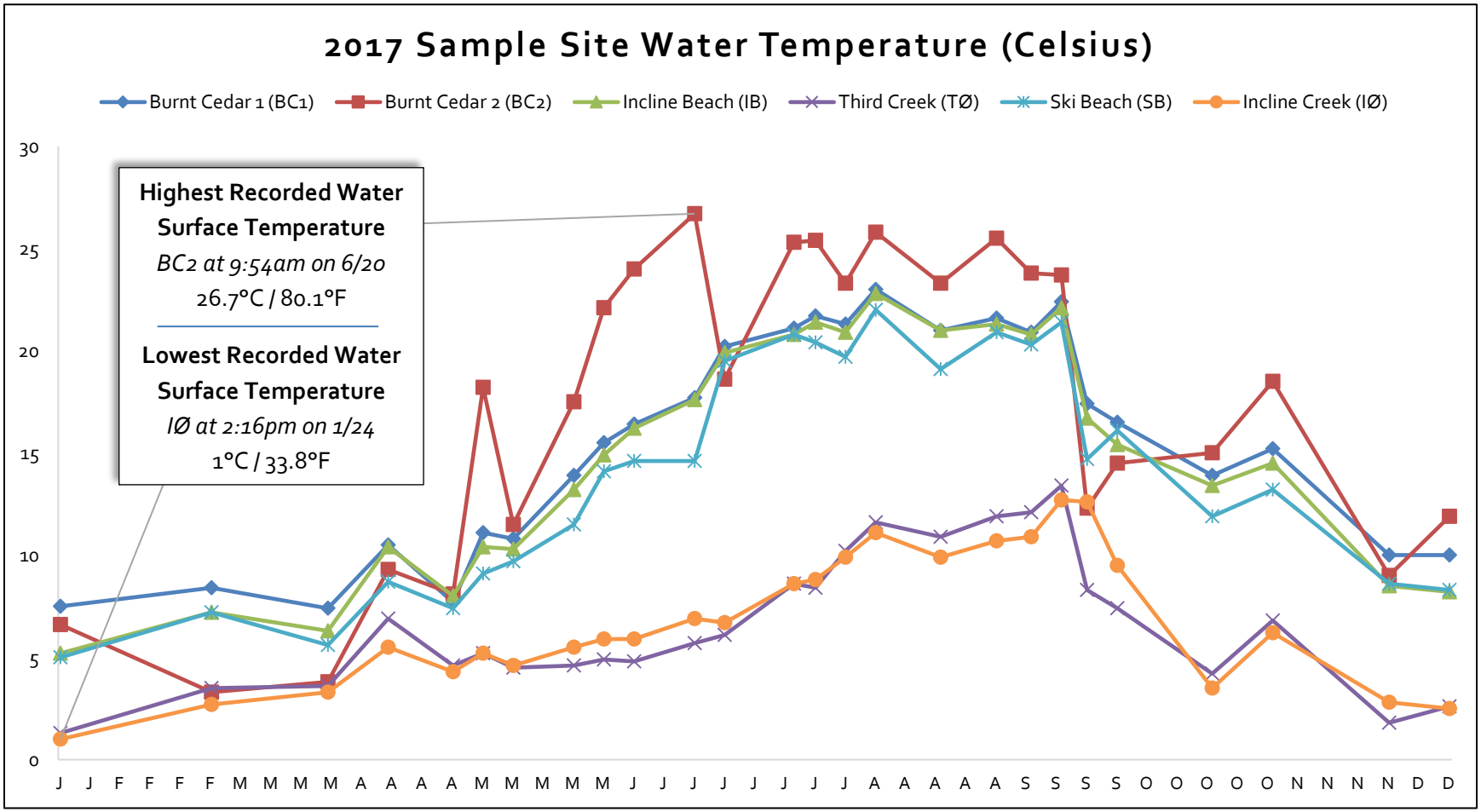


Plate 17: The Incline Village General Improvement District monitors local beach sites for total coliform, fecal coliform, and turbidity levels. Map provided by the Nevada Tahoe Water Suppliers Association.

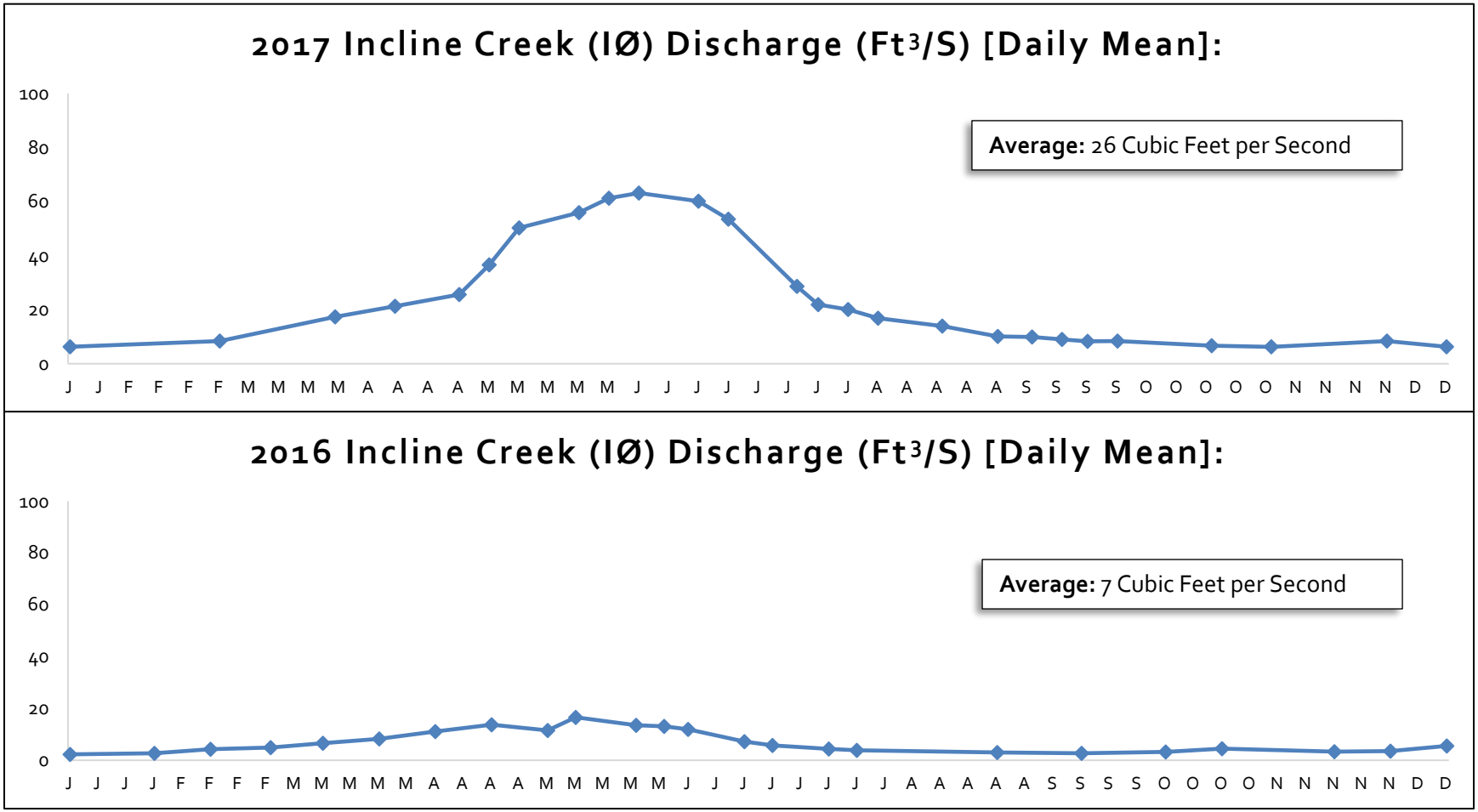
Sample Site Data

A total of 26 individual sample events were conducted at random by Waste Not staff in 2017 to record the parameters described earlier in this section. The data is presented in graphical form but could include possible errors related to human interaction, unexpected weather events or unanticipated activities that occurred upstream or nearby. Water quality affects the local ecosystem in many tangible and invisible ways. It influences the health of vegetative, aquatic and terrestrial organisms that utilize the water for basic needs. It also influences the health of the people who utilize the resource for recreation and as the primary source for drinking water. This chart presents temperature as a basic water quality parameter. Water temperature is measured by hand at the site surface utilizing a calibrated instrument.



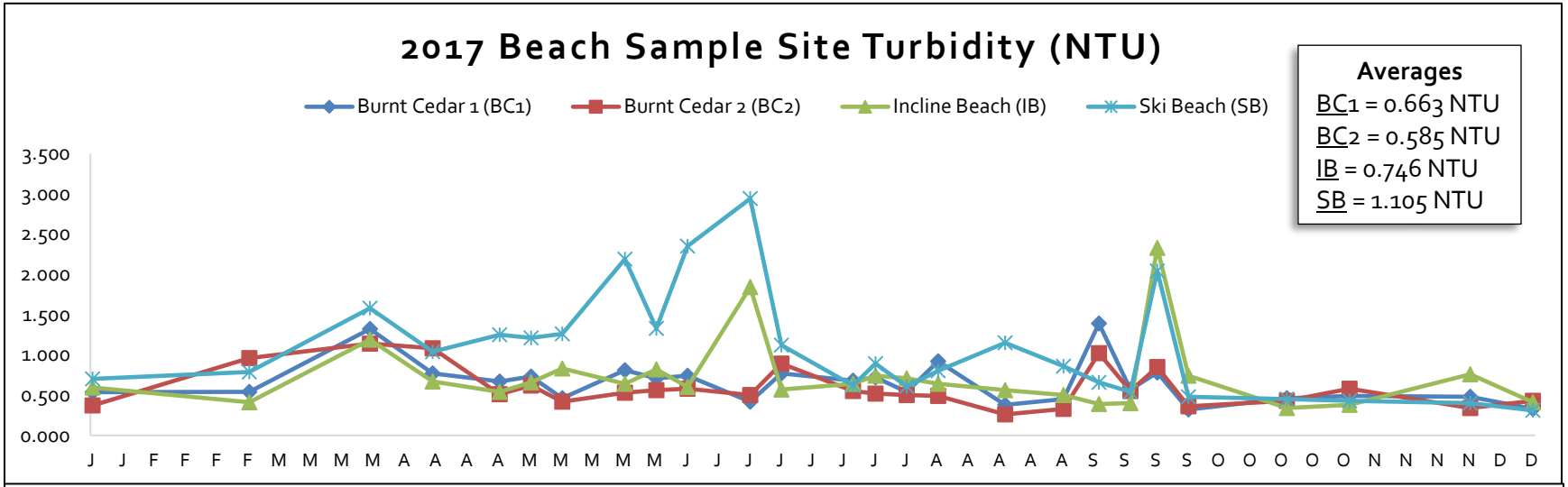
Incline Creek Water Flows

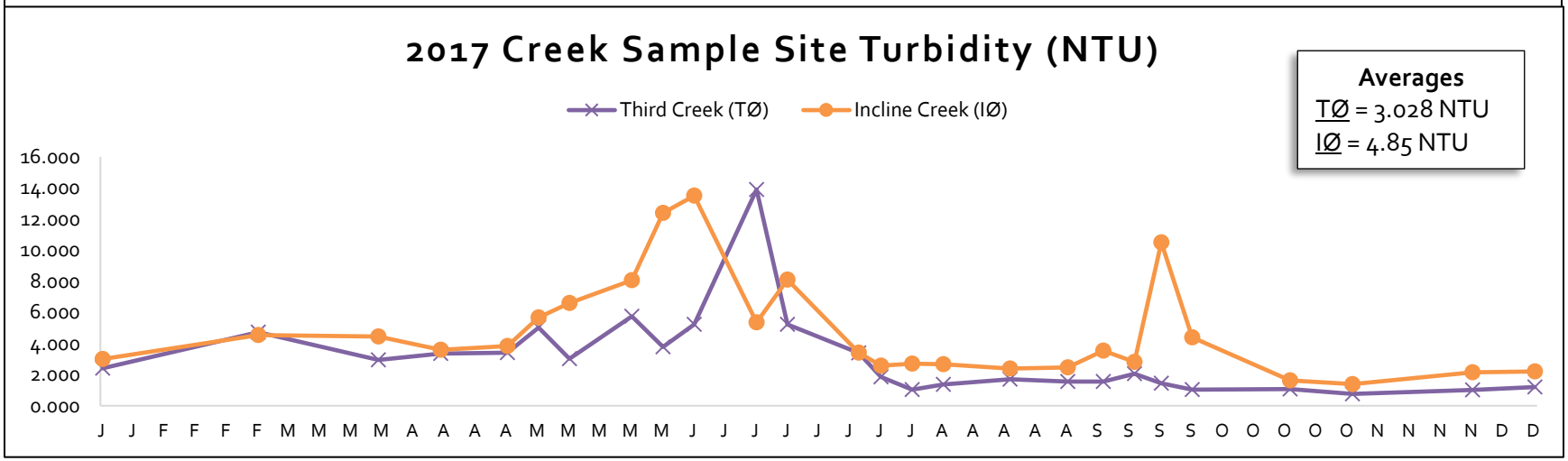
The chart below depicts the water flow discharge from Incline Creek as it is measured by the United States Geological Survey (USGS) monitoring station located near Lakeshore Boulevard. This is measured as cubic feet per second and typically peaks during the early summer as the snow melts. The water from Incline Creek joins the lake in between Ski Beach and Hermit Beach. The datapoints and averages depicted in these charts are consistent with the 26 sample events that took place in 2017 and may differ from finalzed USGS figures. Discharge nearly reached 70 cubic feet per second at its peak in 2017, whereas approximately 17 cubic feet per second was the recorded peak in 2016. This difference highlights the impact of the snow storms that were experienced the early part of 2017.



Turbidity Results

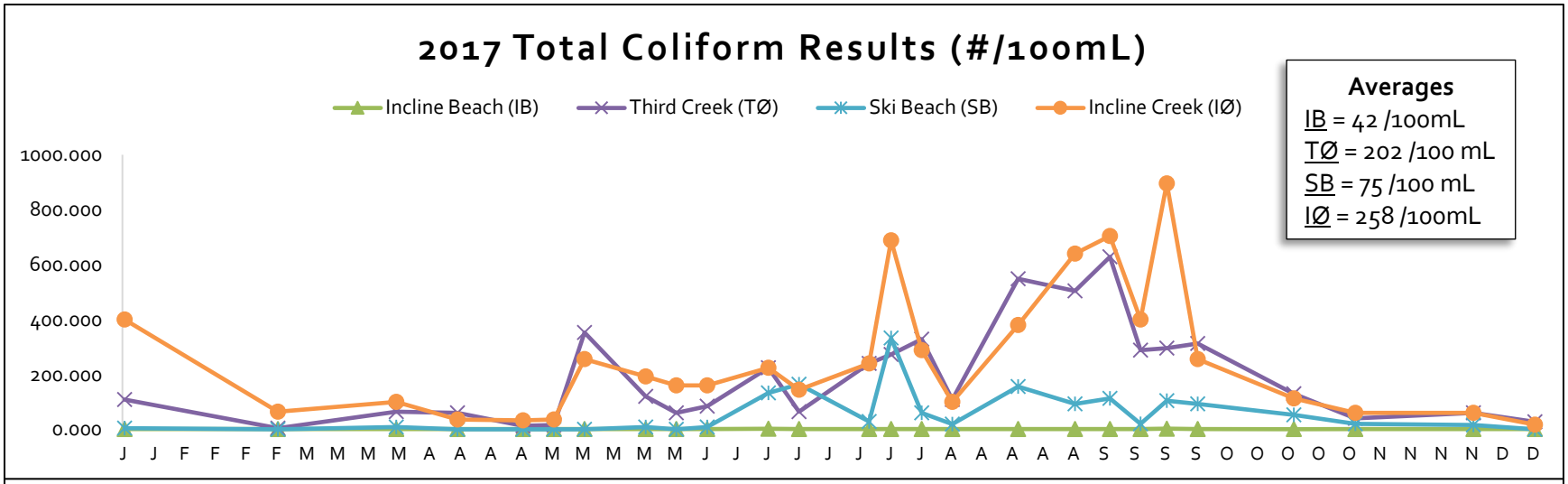
The measurement of turbidity is a key test of water quality. Turbidity is the cloudiness or haziness caused by large numbers of individual particles that are generally invisible to the naked eye. Turbidity can indicate high stream flows or other disturbances that may be occurring upstream of the sample point. Turbidity is measured as NTU, which stands for Nephelometric Unit, and examines scattered white light. A sample is gathered by hand and brought to Public Works' Nevada state-certified laboratory for turbidity analysis with calibrated equipment.

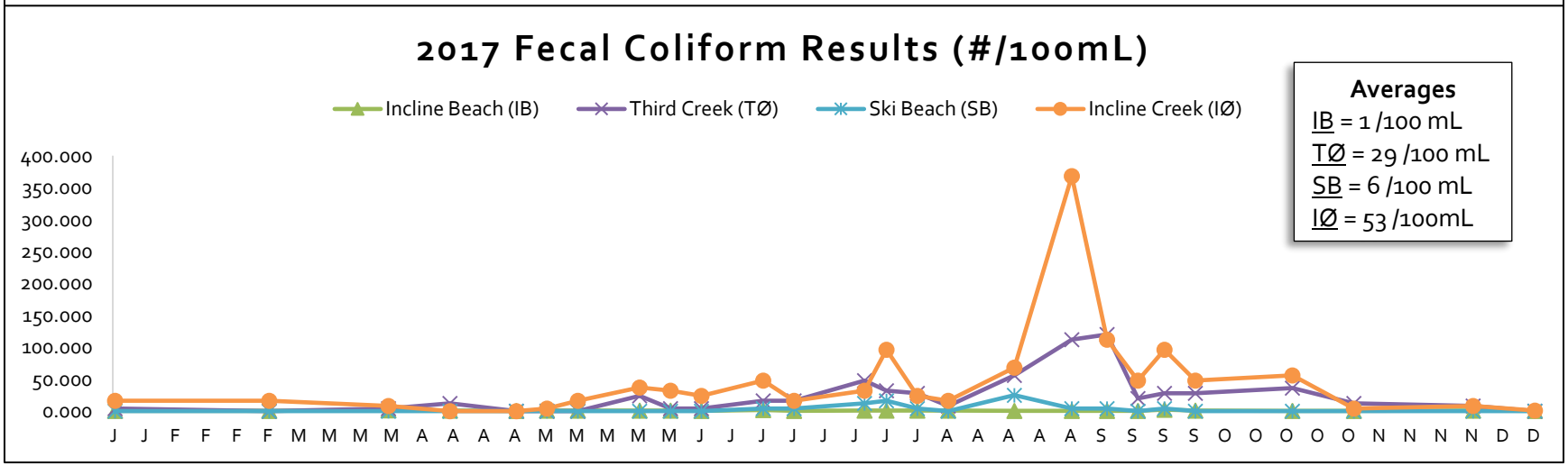




Coliform Results

Coliforms are a broad class of bacteria found naturally in the environment. Coliform can include animal feces or other disease-causing organisms. Coliform results are a simple tally of the number of bacteria that appear due to organisms present in the sample. Fecal coliform is measured using the same methods but with a separate indicator. Incline Beach and Ski Beach coliform results have been included alongside results from Third Creek and Incline Creeks for comparison. Burnt Cedar Beach sites share a similar trend with data recorded at Incline Beach.





COMMUNITY ALLIANCE

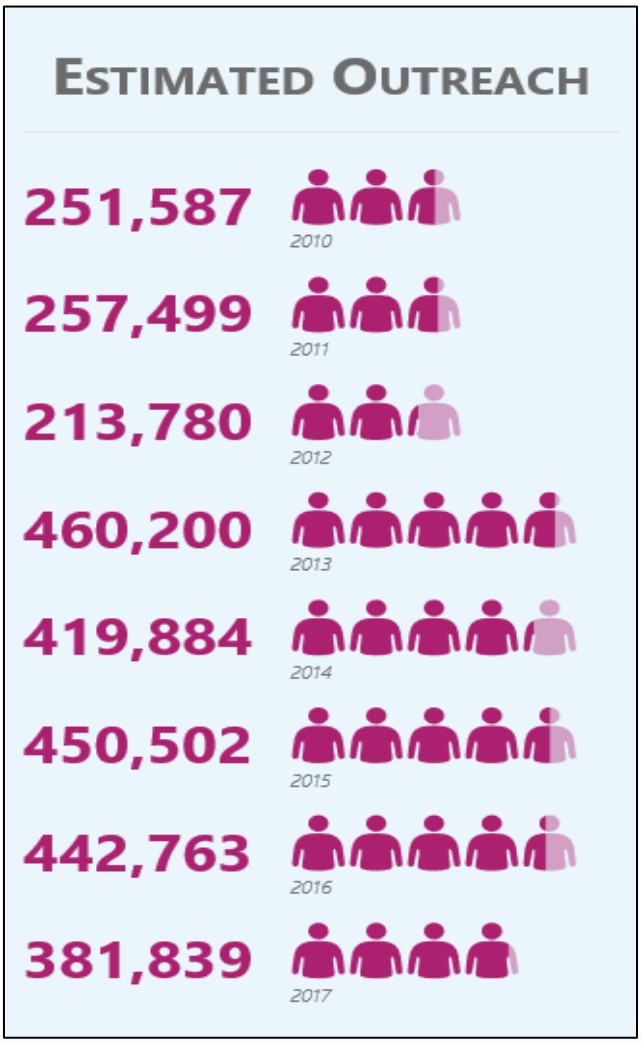
Introduction

Public Works has participated in community outreach, involvement and education for 25 years with the establishment of the Waste Not program. Public Works outreach also includes newsletter inserts in every utility bill with staff available in person and by phone to answer customer questions. Waste Management, Inc. conducts its own outreach per services offered.

Waste Not Program

The Waste Not Program is best described as the Community Conservation Services for the District. Waste Not assumes most responsibilities that would resemble an Environmental Health and Safety or Ecosystem Services Division that other utilities, institutions or municipalities have developed. Staff come from a diversity of backgrounds, but all members have a passion for Lake Tahoe's protection and enhancement.

Waste Not's mission is to empower sustainable living by providing conservation programs and services for our community in the areas of watershed protection, water conservation, recycling, household hazardous waste, living with wildlife and the Tahoe environment. Waste Not is part of IVGID's Public Works Department, it also serves as the home agency for the Tahoe Water Suppliers Association.



Facebook pages have been established for:

- **IVGID Public Works**
- **Bear Smart - Incline Village**
- **Drink Tahoe Tap**
  (Tahoe Water Suppliers Association)

Extensive website information on all topics is available at the following web locations:

www.yourtahoeplace.com

www.bearsmartinclinevillage.org

www.drinktahoetap.org

Public Outreach

In 2017, an estimated 380,000 persons received the Waste Not/TWSA messages via radio, TV, print and web publications, phone and email inquiries, live classes, community forums, custom presentations, site tours and contact at over 40 regional events.

Employees produce custom brochures, posters, flyers, factsheets, stickers, magnets and buttons, refillable water bottles, reusable grocery bags, dog-waste collection supplies and other items. Waste Not uses local print, online resources and social media outlets to promote information, services and events.

2017 is the 25th anniversary of the Waste Not Program, which celebrates a rich history of environmental impact management ranging from watershed protection, solid waste containerization and reduction as well as public education on a wide variety of topics. Please See Appendix C of this document for a detailed list of projects that the Waste Not Program has contributed to over the past 25 years.

School Lessons

Waste Not staff offers an average of 20 annual educational programs on stream science, recycling, and wildlife awareness to students in the Incline Village/North Shore schools (Pre-K to college). In the summer months, lessons are offered at regional youth organization camps. On-site tours of the Public Works water and sewer operations and Waste Not's technical services are offered upon request.

Joe teaches students about source water protection at the beach.

Take Care Tahoe

Take Care Tahoe is a collective group of more than 30 organizations that love Lake Tahoe and want to see more people connect with this beautiful natural environment. The Take Care™ campaign has been designed for use in outreach materials. Trash cans, parks, hotel lobbies, piers, restaurants, beaches or trails. Really, anywhere within reach of people who might be making simple mistakes that are hurting our environment. To find out more information, see upcoming events and request a media toolkit for an agency, business and/or property, visit: www.takecaretahoe.org.

Be Number One at Picking up Number Two

At Lake Tahoe and many other areas throughout the United States, people have become concerned about the effects of accumulated dog waste on water quality. Dog waste, like any waste, may contain a variety of microbes, some of which could cause disease. Examples of diseases that can potentially be transmitted from dogs to humans through feces include Salmonella, Giardia, E-Coli and Cryptosporidium.

The Tahoe Water Suppliers Association and Public Works sponsor waste stations to encourage dog owners to clean up after their pets. These stations are placed in high impact areas and monitored by volunteer or partner agency staff. As of December 2017, dozens of sponsored stations are currently in use in Crystal Bay and Incline Village.

Bear Smart Program

Waste Not staff provides education and outreach to residents, visitors and local businesses on general wildlife issues with an emphasis on proper trash storage. Services include: media and outreach, presentations, a bear box rebate program reestablished July 2014, on-site assistance with bear box location, repair of wildlife-resistant trash carts and peer community research.

Staff works closely with Waste Management, Inc. to make sure defective units are replaced promptly. Units are labeled with "Lock the Dumpster" stickers (bilingual: English/Spanish). Bear Smart information is placed on dumpster enclosures. Waste Not's Bear Smart Program provides education on proper solid waste management with a goal to reduce human/bear conflict.

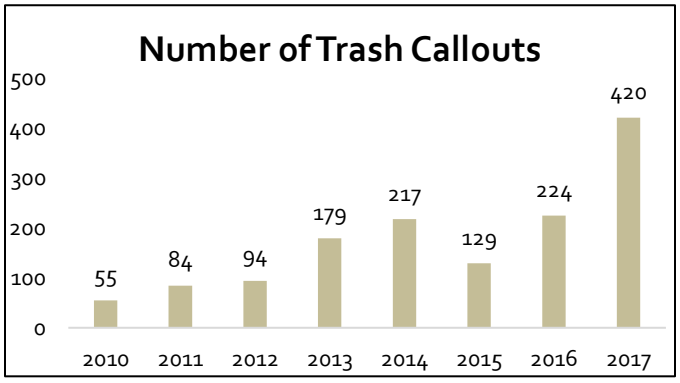
Water Use Efficiency

Public Works customers receive "high water use" courtesy notifications on their monthly bill if use increases or if the meter runs constantly for more than 24-hours. IVGID staff conducts free, on-site landscape water use audits each summer for customers upon request. Public Works and many of its employees are members of the American Water Works Association (AWWA). Several staff members offer valuable resources to the District by holding Water Use Efficiency Practitioner Certifications offered by the AWWA.

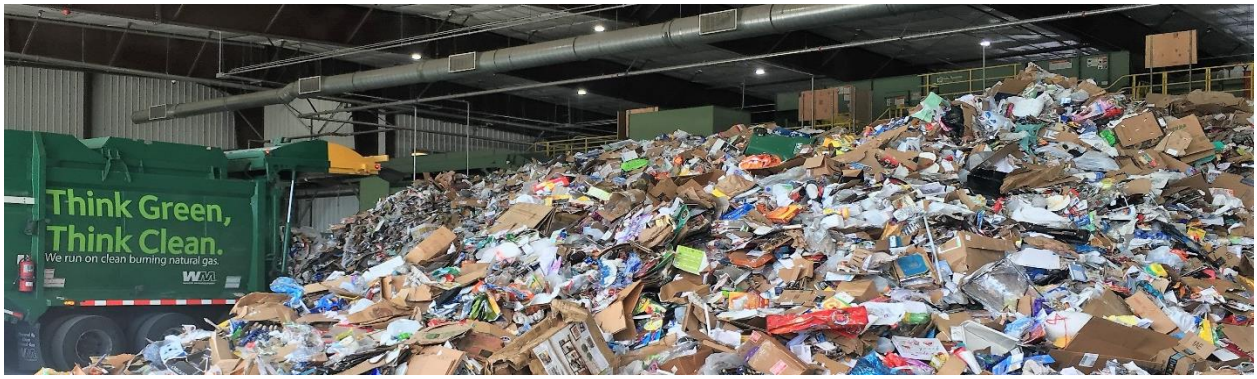
Let's Talk Trash

The IVGID Board of Trustees approved a new solid waste franchise agreement with Waste Management, Inc. on July 7, 2016 based on recommendations from a Solid Waste Committee put together by the IVGID General Manager to evaluate options, problems and feedback from community members.

All residents have been distributed one 64-gallon rolling cart for landfill bound waste and one 64-gallon rolling cart for comingled recyclables to both be collected once per week. Residents have the option to upsize to a 96-gallon cart or downsize to a 32-gallon cart and are able to return the recycle cart according to the individual property's needs. Wildlife Resistant Carts are available in 96-gallon and 64-gallon sizes for properties that want to prevent or have had issues with wildlife. Bear Shed service is available at the lowest monthly service rate for properties that have metal garbage can enclosures installed to incentivize best practices for securing waste and reducing human conflict with wildlife.

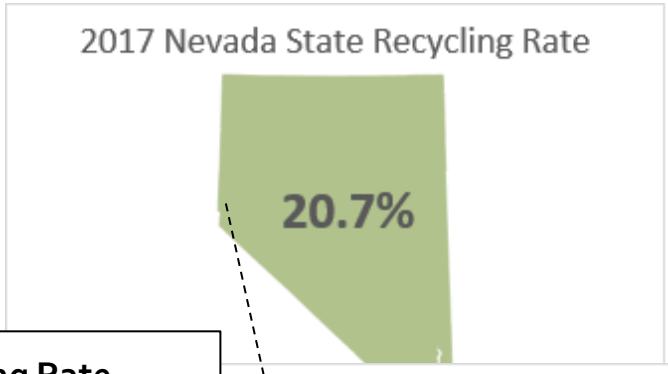


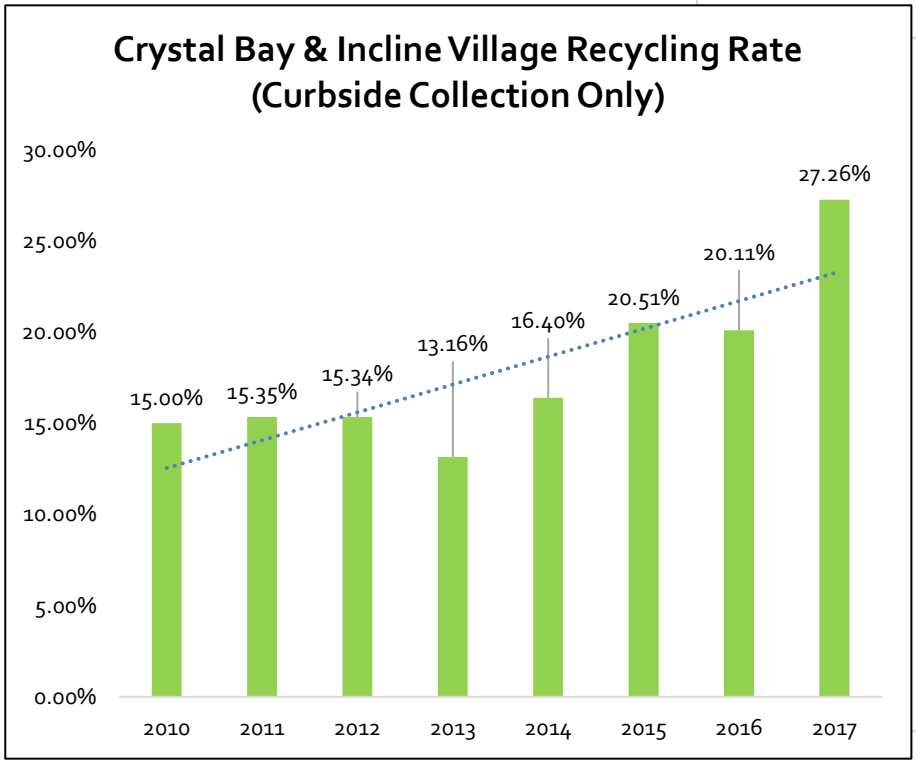
The change requires the community's cooperation. The ordinance approved by the Board of Trustees is enforced by the Public Works Solid Waste Technician. Reporting procedures allow citizens to document issues so a technician can respond accordingly. Enforcement of this ordinance has occurred since at least 2010 and increased significantly in 2017 due to a "Zero Tolerance" policy that imposes a cart upgrade and fine structure for ordinance violations such as overflowing waste or apparent wildlife interaction. The number of trash callouts record the number of actionable issues found by a technician. Trash Callouts increased by 87.5% in 2017 compared to 2016 records.

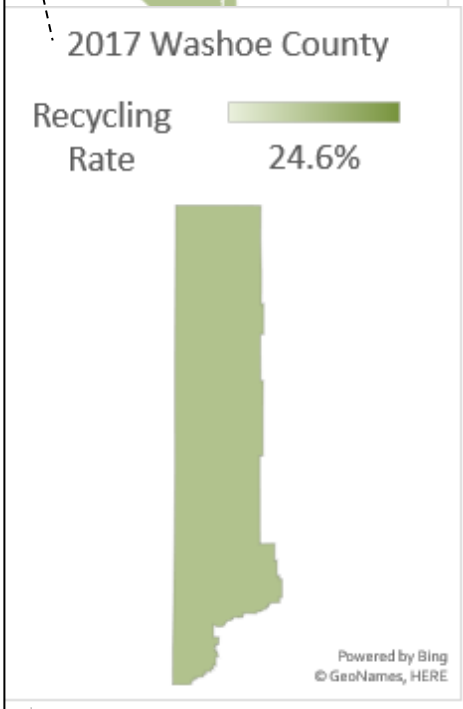


Community Landfill Waste and Recycling

Waste Management, Inc. provides weekly landfill bound and recycling collection services to Crystal Bay and Incline Village residents in addition to a transfer station where residents may dispose of excess waste or recycling. Services are available to residents and commercial properties 365 days throughout the year except during severe weather events. Waste Management, Inc. (WM) accepts yard waste during designated dates throughout the year. WM also accepts sharps, construction debris and collects holiday trees curbside during a designated timeframe after the Christmas holiday. The community wide single stream recycling rate in 2017 was 27.3%. The Washoe County recycling rate was 24.6% and State of Nevada recycling rate was 20.7% for 2017 (www.*nvrecyles.nv.gov*).

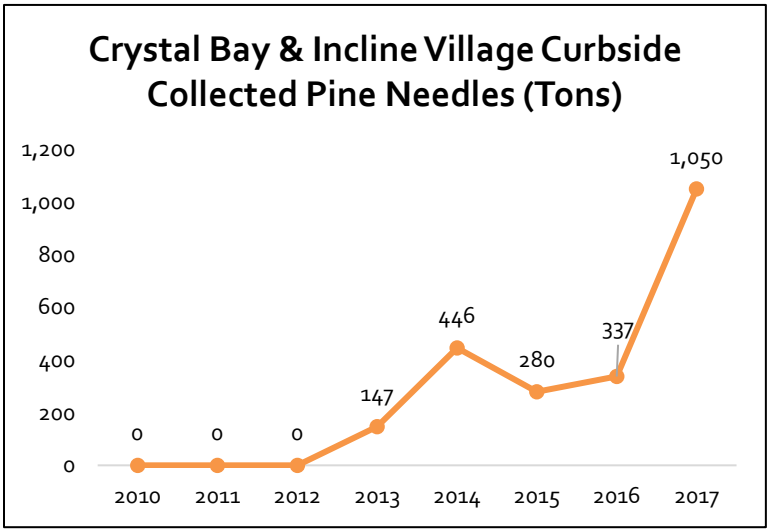




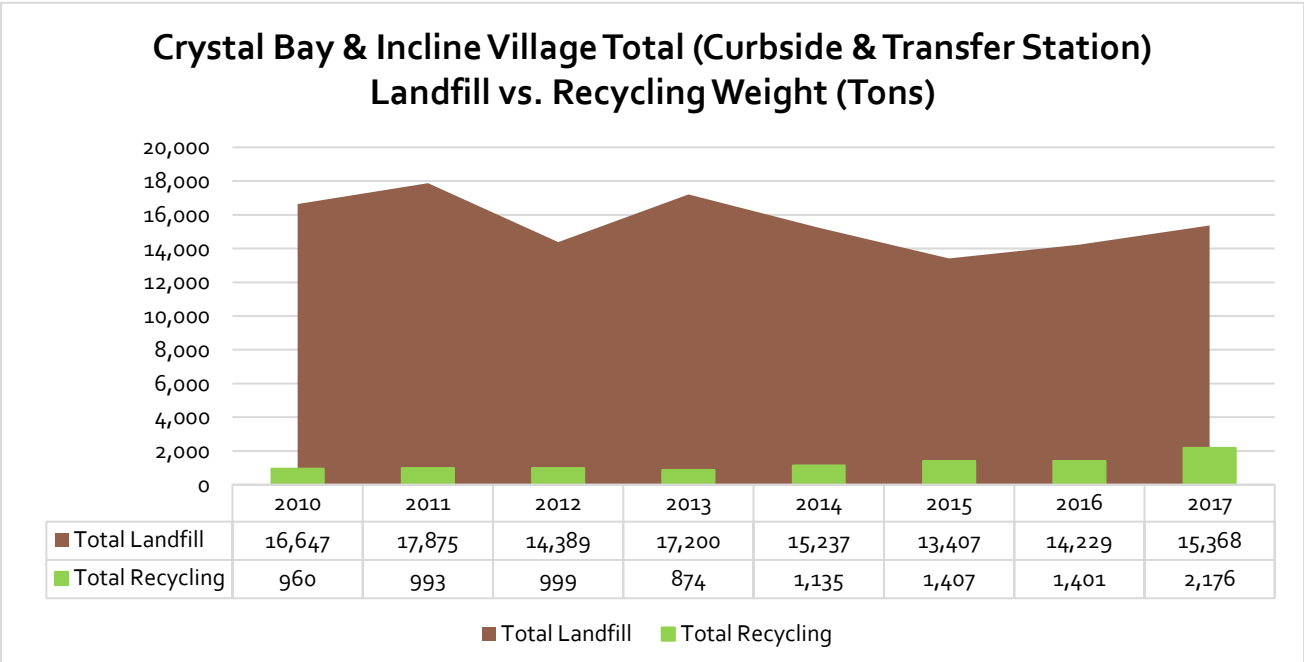


Curbside collection of pine needles and associated yard debris increased from 12 weeks per year to 16 weeks per year with approval of the new waste franchise agreement that was implemented in 2017. The Diamond Peak Ski Resort parking lot was the home of a drop-off "pine needle pile" beginning in 1997. Since the curbside program started in 2013, a total of 2,260 tons of pine needles have been collected by WM and processed by Full Circle Compost in Carson City. Nearly half of that tonnage was collected in 2017 alone.

Christmas tree recycling has taken place since 1997. Christmas trees are dropped off by residents at Preston Field in Incline Village. The North Lake Tahoe Fire Protection District chips the trees for use as mulch and ground cover on District properties.



The total amounts of community recycling and landfill materials are displayed on the graph below. These figures include all route collected materials in addition to materials brought by customers to the Incline Village Transfer Station that include construction/demolition materials and miscellaneous items.



	2010	2011	2012	2013	2014	2015	2016	2017
Total Landfill	16,647	17,875	14,389	17,200	15,237	13,407	14,229	15,368
Total Recycling	960	993	999	874	1,135	1,407	1,401	2,176

Community Household Hazardous Waste and Electronic Waste

The Public Works Waste Not program staff collects Household Hazardous Waste (HHW) and Electronic Waste (E-Waste) from current Crystal Bay and Incline Village residents with valid proof of residency. Hazardous waste is collected and treated by Stericycle Environmental solutions, most electronic waste is collected by California Electronic Asset Recovery (CEAR) and reusable electronics are brought to NV Recycling by IVGID staff. This program is operated every Tuesday and Thursday from 3:00pm to 5:00pm February 1 – October 31 and from 3:00pm to 4:30pm November 1 – January 31 or by pre-arranged appointment. The site closes during holidays and severe weather. At least two staff members with HAZWOPER (Hazardous Waste Operations and Emergency Response) certifications must be present during operational hours to ensure that all safety and regulatory codes are properly enforced.

Staff delivers reusable e-waste to NV Recycling in Carson City, NV.

Each person in the United States produces an average of 4 pounds of household hazardous waste each year for a total of about 530,000 tons per year in the United States of America. The Average U.S. household produces more than 20 pounds of household hazardous waste per year. As much as 100 pounds can accumulate in the home, often remaining there until the residents move out or conduct an extensive cleanout (www.epa.gov).

Stericycle® Environmental Solutions

CEAR

Number of HHW Events Held

99 ★★★★★★★★★★ *2015*

101 ★★★★★★★★★★½ *2016*

104 ★★★★★★★★★★½ *2017*

Number of HHW Customers

1,452 *2015*

1,694 *2016*

1,782 *2017*

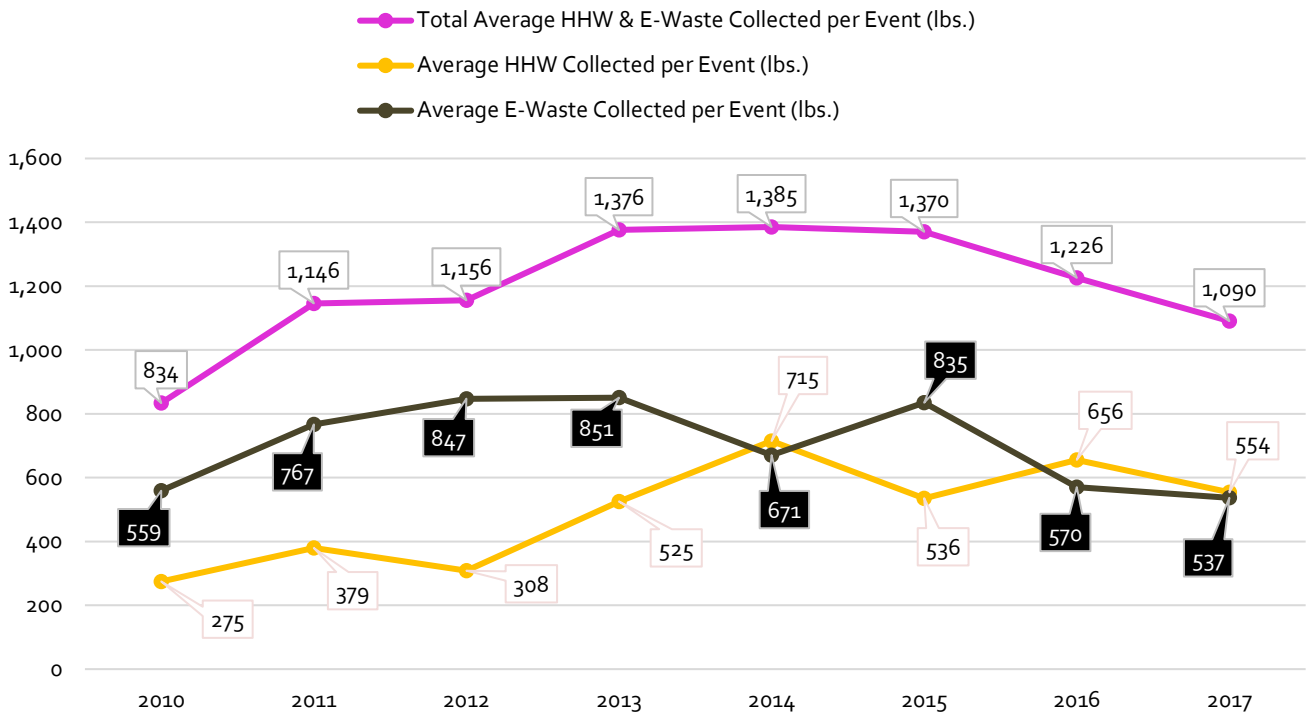
Joe and Sarah organizing the community's hazardous waste for proper disposal.

According to the 2017 IVGID Comprehensive Annual Financial Report (CAFR), there are approximately 8,100 recreation accounts in Crystal Bay and Incline Village. These accounts essentially represent the total number of active households that have access to the Public Works HHW and e-waste program. If only half of these households utilized this service in 2017, then the community average was 14 pounds of hazardous waste and 14 pounds of electronic waste produced per household. Therefore, households in this community produce less hazardous waste than the national average of 20 pounds/year.

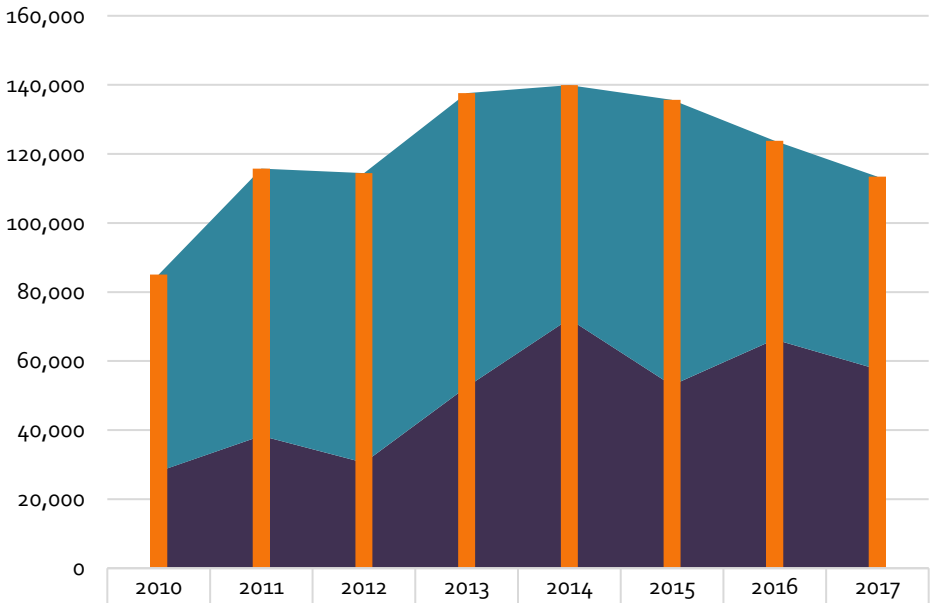
The 2010 U.S. Census indicates that the population of Crystal Bay was 305 and the population of Incline Village was 8,777 for a total population of 9,082 individuals. 6 pounds of hazardous waste and 6 pounds of electronic waste was produced per capita in 2017, assuming all those individuals live in within the District year-round and have access to this service. These statistics indicate that Crystal Bay and Incline Village citizens produce more hazardous waste per capita than the national average of 4 pounds/year.

The number of customer interactions tracks how many individuals presented their IVGID Pass or other proof of residency to gain access to this service throughout the year. The individual is a representative of the household and no information is gathered to indicate the amount of waste that was produced per capita from that household. Some individuals come more than once per year and each drop-off interaction is counted toward the total number of customers served. HHW customers brought an average of 32 pounds of hazardous waste and 31 pounds of electronic waste per visit in 2017.

Community HHW and E-Waste Materials Processed per Collection Event by Weight (Pounds)

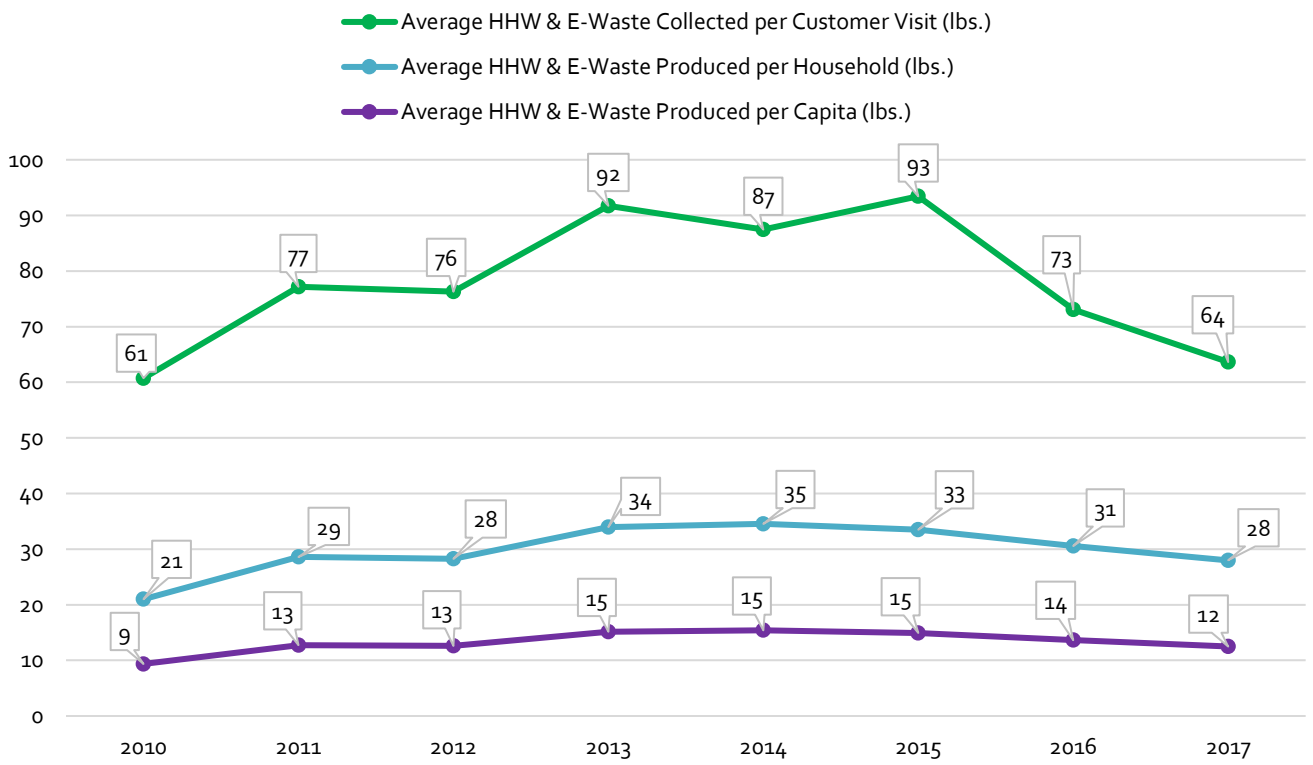


Total Community Household Hazardous and Electronic Waste Processed per Year by Weight (Pounds)

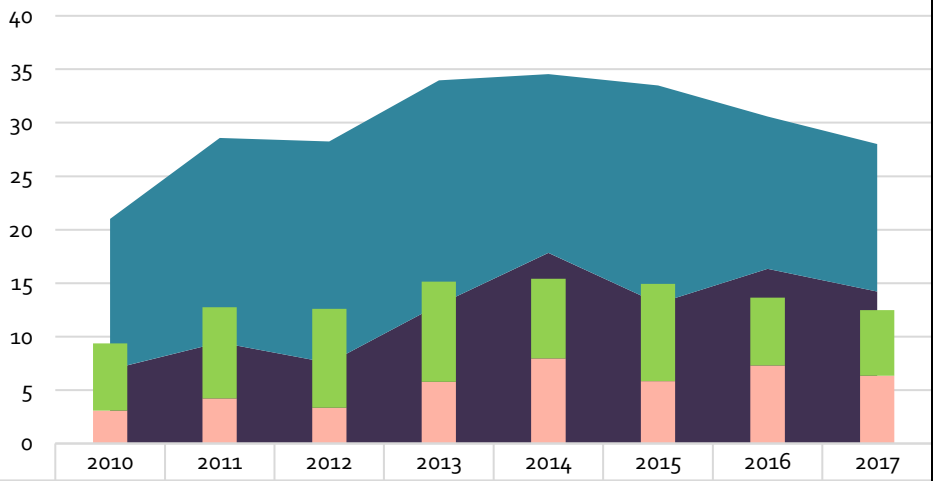


	2010	2011	2012	2013	2014	2015	2016	2017
Electronic Waste Weight (lbs.)	57,009	77,434	83,893	85,050	67,726	82,640	57,600	55,820
Household Hazardous Waste Weight (lbs.)	28,017	38,320	30,527	52,545	72,192	53,020	66,220	57,586
Combined Total Weight (lbs.)	85,026	115,754	114,420	137,595	139,918	135,660	123,820	113,406

Community HHW and E-Waste Materials Collection Statistics



Average Community Household Hazardous and Electronic Waste Produced per Household vs. per Capita by Weight (Pounds)



	2010	2011	2012	2013	2014	2015	2016	2017
Average E-Waste Produced per Household (lbs.)	14	19	21	21	17	20	14	14
Average HHW Produced per Household (lbs.)	7	9	8	13	18	13	16	14
Average E-Waste Produced per Capita (lbs.)	6	9	9	9	7	9	6	6
Average HHW Produced per Capita (lbs.)	3	4	3	6	8	6	7	6

SUPPLY CHAIN MANAGEMENT

Introduction

Sustainable procurement is an encouraged activity and takes place with goods related to bathroom tissues and kitchen towels among other daily use items. Employee events are typically supplied with reusable cutlery, recyclable materials and compostable products when appropriate. The checklist presented in this section can be used as a purchasing guide by anybody who wants to plan his or her procurement procedures with environmental, financial and cultural sustainability in mind.

A policy approved by the Board of Trustees would require these practices for District operations, but no such policy currently exists. Indirect policy benefits related to reduced pollution, avoidance of unlawful manufacturing practices and ecosystem protection are difficult to quantify especially for an organization of this size. However, procurement policies should not allow wastefulness.

Sustainable Purchasing Checklist

First, determine if the product or service is truly necessary. Purchasing will need to be balanced with issues of product performance, cost and availability.

Waste Reduction

- ☐ Is the Product Durable?
- ☐ Can the product be easily and economically serviced and maintained?
- ☐ Is the product designed to reduce consumption and minimize waste?
- ☐ Is the product reusable?
- ☐ Is the product technically and economically recyclable in the immediate area?
- ☐ Do facilities and internal collection systems exist to recycle the product?
- ☐ Can the product be returned to the supplier at the end of its useful life?
- ☐ Is the product compostable and are systems in place to compost the product on or off site?
- ☐ Will the product biodegrade over time into harmless elements?

Packaging

- ☐ Is the product necessary?
- ☐ Can the product be eliminated?
- ☐ Is minimal packaging used?
- ☐ Is the product packaged in bulk?
- ☐ Is the package reusable or recyclable?
- ☐ Are recycled materials used to produce the packaging and at what percent post-consumer waste?
- ☐ Can the packaging be returned to the supplier?
- ☐ Is the packaging compostable?

Material Source

- [ ] Are recycled materials used in the product? If so, what percentage?
- [ ] What percentage of post-consumer materials is used?
- [ ] If wood is used in the product, what is its source and how is harvested?
- [ ] Is the product manufactured from tropical rain forest wood?

Energy Efficiency

- [ ] Is the product energy-efficient compared to competitive products?
- [ ] Can the product be recharged?
- [ ] Can the product run on renewable fuels?
- [ ] Does the product require less energy to manufacture than competing products?

Supplier Environment Record

- [ ] Is the company producing the product in compliance with all environmental laws and regulations?
- [ ] What is the company's handling environmental and safety issues?
- [ ] Can the company verify all environmental claims?
- [ ] Does the manufacturer/supplier have a company environmental policy statement?
- [ ] What programs are in place/planned for promoting resource efficiency?
- [ ] Are printed materials available documenting these programs?
- [ ] Has the company conducted and environmental or waste audit?
- [ ] Is the product supplier equipped to bid and bill electronically?
- [ ] Has an environmental life-cycle analysis of the product (and its packaging) been conducted by a certified testing organization, such as Green Seal?

Minimize Transportation

- [ ] Can the required products be obtained from local sources?

CONCLUSION

Moving Sustainability Forward

This report features a few select sustainability measurements that are most important to Public Works operations and its stakeholders. Future reports may give more detail to existing datasets but will also include additional sustainability related measurements, as those datasets are prepared. The meaning of this information is to inform stakeholders, staff and leadership within the organization of potential improvements that could be made to our overall operational footprint.

Goals for Future Reports

The American Water Works Association reports that energy efficiency measures are easy to implement and enable utilities to document significant cost savings, greenhouse gas emissions, and reduced environmental impacts. Documenting successful and cost-effective sustainable practices related to resource use helps utilities make the case for sustainability. Future reports will expand the information presented in this report while introducing fleet fuels consumption as a major influence over emissions. This report assists Public Works in making progress toward achieving a sustainable utility.

Summary

The Incline Village General Improvement District recognizes that the community of Crystal Bay and Incline Village is a system of built, natural, and human networks. IVGID also realizes that we must plan from a regional perspective while implementing local projects and initiatives. Sustainability is an essential behavior in managing a community-wide system. Our environmental resources are pristine yet growing populations, drought and climate change challenge the resiliency of our community. This challenge demands that organizations and communities within the Lake Tahoe Basin make plans with sustainability as a key strategy element.

IVGID is addressing the sustainability element through long-range principles, a sustainability framework, in addition to this report. In conclusion, it is most efficient to redevelop first, provide efficient infrastructure and support concentrated development. Restoration and enhancement of the environment along with enhancement of recreational and heritage resources will help preserve our local ecosystem. The practice of good communication, civic engagement, leadership, and fiscal responsibility will make the most progress in cultivating a sustainable community.

APPENDICES

Appendix A

INCLINE VILLAGE
GENERAL IMPROVEMENT DISTRICT
ONE DISTRICT ~ ONE TEAM

RESOLUTION NUMBER 1836
ENVIRONMENTAL SUSTAINABILITY RESOLUTION
INCLINE VILLAGE/CRYSTAL BAY, NEVADA

WHEREAS, it is in the interest of Incline Village/Crystal Bay, Nevada to conserve and protect natural resources for current and future generations; and

WHEREAS, IVGID acknowledges that a changing climate poses economic and recreational challenges to the communities of Incline Village/Crystal Bay; and

WHEREAS, IVGID operations have economic, cultural and environmental impacts that are currently not fully evaluated and benchmarked; and

WHEREAS, the evaluation of sustainability topics including but not limited to: Economic Health, Community Health, Safety and Equity, Forest, Biological and Recreational Resources and Management, Solid Waste and Recycling and Water Quality, Resources and Conservation and can provide economic and environmental benefit to the District; and

WHEREAS, Nevada Revised Statutes 278, 332, 338 and 444A and the Washoe County Master Plan have established sustainability-related policies; and

WHEREAS, *the Tahoe Regional Planning Agency has established the Sustainable* Communities Program, Framework and Action Plan; and

WHEREAS, this policy will further contribute to the District's compliance with county, state and regional governing bodies; and

WHEREAS, IVGID being located within the Lake Tahoe Basin and watershed creates an enhanced need for environmental stewardship and leadership; and

WHEREAS, sustainability is an essential behavior of the IVGID core values which are Integrity, Service, Responsibility, Excellence, and Teamwork.

NOW, THEREFORE, BE IT RESOLVED THAT THE BOARD OF TRUSTEES OF INCLINE VILLAGE GENERAL IMPROVEMENT DISTRICT does hereby recognize the importance of environmental sustainability for our organizations and the priority it must play in decision- and policy-making; and encourages the citizens of Incline Village and Crystal Bay, Nevada in taking a proactive role in changing human behavior in embracing sustainable practices to help protect our environment.

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Appendix B

Long Range Principles

LONG RANGE PRINCIPLE #1
Resources and Environment

Initiating and maintaining effective practices of environmental sustainability for a healthy environment, a strong community and a lasting legacy.

- Review and upgrade District policies and practices to encourage or require waste reduction, recycling and environmentally preferable purchasing.
- Develop sustainability measures, goals and metrics to create and/or maintain a sustainable District.
- Provide the community with environmental education and technical services on watershed protection, water conservation, pollution prevention, recycling and waste reduction.

Objectives for 2015-2017

1. Form a Sustainability Committee comprised of representatives from each Department to plan sustainability efforts, prioritize projects, and coordinate internal efforts to implement the best practices relating to sustainability.

Reporting Status - August 24, 2016: In progress
Reporting Status - April 17, 2017: In progress

2. Prepare a policy for review and approval by the Board of Trustees to purchase environmentally preferable products, reuse durable products, reduce the waste stream and prevent pollution.

Reporting Status - August 24, 2016: Resolution 1836, Environmental Sustainability Statement, was adopted on April 29, 2015.
Reporting Status - April 17, 2017: In progress

Appendix C

Celebrating 25 Years of Community Conservation Services by IVGID Waste Not (1992 - 2017)

Year Started	Year Ended	# of Years	Program
1992	Ongoing	25	Waste Not Program Founded
1992	Ongoing	25	Curbside Recycling, from crates --> blue bags --> carts!
2002	Ongoing	25	School Educational Programs
1997	Ongoing	20	Christmas Tree Recycling / Chipping
1997	Ongoing	20	Household Hazardous Waste Drop Off Site
2000	Ongoing	17	Snapshot Day – Volunteer Water Quality Sampling Day
1997	2012	15	Pine Needle Recycling, Diamond Peak Pile maintained
2002	Ongoing	15	Tahoe Water Suppliers Association (TWSA) is founded; Annual Report produced by staff
2003	Ongoing	14	IVGID Watershed Water Quality sampling at beaches and streams (6 locations)
2007	Ongoing	10	Community Clean-Up and International Coastal Cleanup Days
2005	Ongoing	9	Bear Awareness Program (Stash Your Trash/ Bear Smart)
2005	2014	9	Kids for Conservation event held
2007	2016	9	Blue Bag Program for Single Stream Recycling
2000	2008	8	Clean Water Team / IVGID watershed water quality sampling
2007	2015	8	AmeriCorps Team Host Site
2010	Ongoing	7	TWSA's "Drink Tahoe Tap" Campaign
2010	Ongoing	7	Dog Waste Awareness - "They Drop It, You Drink It" & " Your DOG = Your DOODY" Campaigns
2002	2007	5	LT Demo Garden
2009	2014	5	"Zero Waste" Program offered
2012	Ongoing	5	Curbside Yard Waste pickup program
2012	Ongoing	5	Television Recycling offered year round
2013	Ongoing	4	"Butts on the Beach" Campaign
2014	Ongoing	3	Bear Box Rebates: 417 issued / $116,710 in rebates; some rebates offered 2004 -2007
2014	Ongoing	3	"Take Care" Campaign Partnership
2015	Ongoing	2	IVGID Sustainability Programs Research and Development
2016	Ongoing	1	Curbside Containerization; Weekly Recycling

Awards/Recognition

2005 AWWA "Exceptional Source Water Protection" Award
2005 Parasol Community Collaboration "Outstanding Event in Education" Award
2005 Northern Nevada Pine Cone Award
2007 America in Bloom
2008 Parasol's "Best Environmental Program or Event"
2008 America in Bloom
2008 NDEP Source Water Award
2009 "Positive Environmental Impact Award", North Lake Tahoe Chamber of Commerce
2014 "TRPA Lake Spirit Award", North Shore Agency Representative

GLOSSARY AND REFERENCES

Acronyms

AL – Action Limit
AWWA – American Water Works Association
AVB – Anne Vorderbruggen Building (IVGID Administrative Offices)
BCWDP – Burnt Cedar Water Disinfection Plant
CAP – Climate Action Plan
CCR – Consumer Confidence Report
CO_2 – Carbon Dioxide
DO – Dissolved Oxygen
EPA – Environmental protection Agency
E-Waste – Electronic Waste
GHG – Greenhouse Gas(es)
HAZWOPER – Hazardous Waste Operations and Emergency Response
HHW – Household Hazardous Waste
IVGID – Incline Village General Improvement District
LEED – Leadership in Energy and Environmental Design
MGD – Million Gallons per Day
NDEP – Nevada Department of Environmental Protection
NTU – Nephelometric Unit
ppb – Parts per Billion
ppm – Parts per Million
SEZ – Stream Environment Zone
STOKE – Sustainable Tourism Operator's Kit for Evaluation
TBD – To be determined
TDS – Total Dissolved Solids
TRPA – Tahoe Regional Planning Agency
TWSA – Tahoe Water Suppliers Association
WEF – Water Environment Federation
WRRF – Water Resource Recovery Facility

Definitions

Adaptation - Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effect, which minimizes harm or exploits beneficial opportunities.

Climate Change - Any long-term change in average climate conditions in a place or region, weather due to natural causes or as a result of human activity.

Greenhouse Gases Emissions – The emission of gases in the earth's atmosphere that reduce the loss of heat into space.

Mitigation - A human intervention to reduce the sources or improve the uptake (sinks) of greenhouse gases.

Resilience - The ability of a system to absorb some amount of change, including shocks from extreme events, and recover from them to be able to function and provide essential services and amenities that it has evolved or been designed to provide.

Stream Environment Zone - Generally an area that owes its biological and physical characteristics to the presence of surface or ground water.

Sustainability – (1) capable of being sustained; (2a) of, relating to, or being a method of harvesting or using a resource so that the resource is not depleted or permanently damaged ("sustainable techniques") ("sustainable agriculture"); (2b) of or relating to a lifestyle involving the use of sustainable methods("sustainable society"); (3) development that meets the needs of the present without compromising the ability of future generations to meet their own needs; and (4) improving the quality of human life while living within the carrying capacity of supporting ecosystems.

System - The built, natural and human networks that provide important services or activities.

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