ENERGY PLAN 2019

BERKLEY
where you want to be

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JULY 2019

ACKNOWLEDGMENTS

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THE CITY OF BERKLEY

Matthew Baumgarten - City Manager

CITY COUNCIL

Mayor Daniel Terbrack
Mayor Pro Tem Steven W. Baker
Councilmember – Jack Blanchard
Councilmember – Bridget Dean
Councilmember – Ross Gavin
Councilmember – Dennis S. Hennen
Councilmember – Eileen Steadman

ENVIRONMENTAL ADVISORY COMMITTEE

Chairperson – Mark A. Richardson
Committee Member – Brandon Alger
Committee Member – Alex Citron
Committee Member – Julie Goldsworthy
Committee Member – Kathryn Nelson
Committee Member – Audrey Pace
Committee Member – Karyn Stickel
Committee Member – Matt Baumgarten

ECOWORKS

Henrik Mader - Energy Analyst and Lead Planner
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Special Thanks

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PURPOSE OF THE PLAN

This document lays the foundation for a robust energy plan employing six categories to help the City of Berkley achieve its goals of saving energy and reducing costs. This plan is written in a complementary way to be easily added into existing plans such as the city's overall Master Plan during upcoming plan updates. An action plan is located on page 26 and outlines each category by goals, timeframe, and subsequent actions that represent a step-by-step approach to maximizing facility efficiency within the budgetary constraints of the city.

AN ENERGY VISION FOR BERKLEY

Having established an Environmental Advisory Committee, the City of Berkley has demonstrated a commitment to reducing emissions and energy consumption in municipal facilities. The following pages represent a pathway for accomplishing the city's vision of becoming a sustainable, efficient city powered increasingly by renewable energy.

Energy production, management, and consumption are inextricably linked to environmental and community health and climate change – impacts that ripple through local economic development and municipal financial situations in ways that are hard to value but are real and significant nonetheless. Therefore, for municipalities and local governments, prioritizing clean energy projects in concert with long-term energy planning efforts can simultaneously promote community sustainability while generating significant financial benefits.

An energy plan is an important tool for cutting costs, reducing risks, and optimizing returns on investment - in other words, improving the bottom line, inescapably a central concern of city leaders. This benefit alone justifies the exercise. The City of Berkley is positioned to benefit to a far greater and fundamental extent from development of an overall energy strategy that grows the top line of economic growth and municipal revenue.

The vision and goals articulated by the environmental advisory committee as well as the values held among residents, elected officials and city staff, all strongly resonate with an ambitious energy vision. For example, residents are conscious about costs, fossil fuel consumption, and public health. These elements are powerful community-building commitments of a population that is confidently investing in their own future in the course of building and improving a strong and healthy city.

SUMMARY OF RECENT ACCOMPLISHMENTS

- In 2014, the City contracted with Stantec to complete a facilities assessment of all municipal buildings.
- The City of Berkley established an Environmental Advisory Committee to advise city council and the city manager on environmentally sustainable projects and programs.
- The city is actively working to develop clean energy and sustainability goals in concert with the upcoming master plan update process.
- In 2016, the City of Berkley received a Michigan Green Communities Bronze medal in recognition of environmentally beneficial practices and tree planting policy.

The development of a municipal energy vision will tie these efforts, as well as many other existing and future initiatives, into a coherent, prioritized and cost-effective framework that is synergistic with the city's economic and social development, fiscal, sustainability and other goals.

SUMMARY OF RECOMMENDATIONS

The six sections of the Energy Plan present a wide range of recommended goals and actions to build on Berkley's strengths and improve its weaknesses related to energy management and sustainability in the city.

Recommendations reflect how Berkley city management and leadership envision Berkley's energy future and relevant energy goals that the city wishes to achieve in order to advance that vision.

To this end, the opportunities for energy management are presented in six categories:

1. Project selection and implementation
2. Funding
3. Staffing
4. Policies and procedures
5. Data
6. Communications

A comprehensive set of action steps can be found in the Action Plan located at the end of this document.

Disclaimer:
This plan covers energy generation and uses in municipal facilities only and does not cover transportation planning or municipal fleet management. Also, while the plan does not directly address energy management for residents and businesses it is our hope that city officials, residents, and businesses will be encouraged by the success of municipal energy planning to adopt broader-reaching policies, practices, and projects.

1 PROJECT SELECTION & IMPLEMENTATION

The development of this energy plan revealed opportunities for updating how the city manages buildings and selects projects.

GOAL 1: IMPROVE MUNICIPAL BUILDING PERFORMANCE.

GOAL 2: IDENTIFY AND IMPLEMENT CLEAN ENERGY PROJECTS.

The EcoWorks/SEMREO approach to becoming a 100% renewable energy municipality begins with efficiency. Efficient buildings increase the benefits of renewable energy generation while creating comfortable, healthy work environments for municipal employees. The determination of which projects are tackled first is most effective as a data-driven decision guided by an understanding of which buildings are underperforming compared to other buildings of comparable size and use.

Second, a whole-building approach that examines how the various parts of the building work together is strongly recommended. Tackling only the "low-hanging fruit" for example, can lead to oversized HVAC systems, excess lighting, or lost opportunities to couple projects together for more attractive loan terms.

Finally, working across departments and gathering input from facilities maintenance staff and department heads can identify non-energy related building issues (mold, pests, etc.) that can be addressed simultaneously with other upgrades.

Reviewing ongoing planning efforts such as the city's master plan will help to address priority areas and round out the final project selection process. A full set of recommended steps can be found in the Action Plan at the end of this document.

It is recommended to incorporate future energy assessments into a larger municipal energy portfolio such as the capital improvement plan. Table A includes a summary of technical assessments and audits previously completed for the City of Berkley.

Table A: Summary of Technical Assessments and Audits			
Facility Name	**Assessment/Audit Description**	**Assessment/Audit Administrator**	**Assessment/Audit Date**
Previous Assessments/Audits Over Last Five Years			
All Municipal Facilities	Facilities Assessment	Stantec	2014

Stantec Assessment Recommendations

The City of Berkley contracted with Stantec to complete a facilities assessment of all municipally owned buildings in 2014. The report provides a comprehensive overview of the existing building stock including condition, priority projects, energy consumption, and recommended projects. While a variety of opportunities for increasing municipal energy efficiency are contained within the facilities report, the following are recommended for immediate implementation due to strong financial benefits and rapid return on investment:

- upgrade lighting fixtures in city buildings to LED models as soon as possible;
- install occupancy sensors on lights throughout public buildings where appropriate;
- upgrade streetlights to LED models as quickly as possible, focusing on least efficient fixtures first;
- assess utility bills for accuracy of rate subscriptions.

With strong support for energy efficient projects from the City Council and Mayor, the city is positioned to continue exploration of creative methods to manage and finance energy efficiency improvements and clean energy projects. It is recommended to establish a process to continuously assess municipal facilities by way of energy audits and assessments.

An up-to-date summary of implemented clean energy actions is in Table B and a summary of clean energy projects to be completed in the near future is located in Table C.

Facility	EUI 2012-2013 (kBTU/ft^2/year)	Inefficiency
Library	80	43%
Public Safety	305	360%
City Hall	-	-
District Court	-	-
Historic Fire Hall	-	-
Public Works	169	83%
Main Garage	-	-
Office	-	-
Aux. Garage	-	-
Salt Dome	-	-
Community Ctr.	113	61%

Fig. PSI-1: Stantec Energy Efficiency Comparison

Figure PSI-1 above illustrates the energy efficiency findings of the completed Stantec report by Energy Use Intensity (EUI) measured in kBTU/ft^2/year. Comparing the EUI of buildings provides a standardized metric for evaluating efficiency and assists with project prioritization. The column titled *Inefficiency* shows the level to which the building is underperforming compared to similar building types sourced from a national database as described in the Stantec report. The public safety and Public Works complexes are metered as groups and it is recommended that separate meters or submeters are installed for more accurate energy data monitoring.

CASE STUDY:

Ypsilanti Going Solar:

"The city of Ypsilanti has partnered with grassroots effort SolarYpsi and independent power producer Chart House Energy to create a local team named Solar Destination Ypsilanti" for "the SunShot Prize: Solar in Your Community Challenge…The team plans to install three PV systems at the New Parkridge housing development, at the Ypsilanti Department of Public Services, and at the site of the old landfill near exit 183 on I-94."
Source:http://www.secondwavemedia.com/concentrate/features/ypsisolar0449.aspx

SOLAR YPSI | For a Sustainable YPSILANTI

Figure 1. Solar array Installation on City of Ypsilanti Department of Public Service carport. Source: solarypsi.org

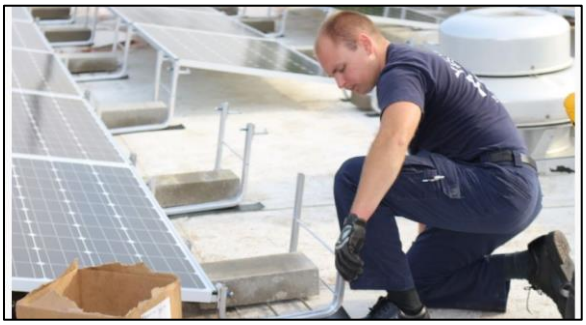

Figure 2. Solar array Installation on City of Ypsilanti Fire Station. Source: solarypsi.org

Figure 3. Solar array installed on historic property in City of Ypsilanti. Source: City of Ypsilanti.

Table B: Summary of Implemented Clean Energy Actions									
Facility Name	**Projects Completed**								
	Project Description	**Date Completed**	**Fund Source**	**Retro-Commissi-oning**	**Lighting**	**Building Envelope**	**Supplement-al Loads (Electronic Equipment)**	**Renewable Energy**	**HVAC**
Streetlights	Partial LED retrofit	2018			✓				
Ice Rink	LED retrofit	2018	3rd party financing		✓				

Table C: Project Action Plan Summary																
Facility Name	**Expected Implementation Date**	**Best Practices Opportunity**										**Preparation**		**Impact**		
		Air Handlers/ RTUs	**Boilers**	**Chillers**	**Cooking Equipment**	**DHW Systems**	**Heating/Cooling Systems**	**Building Envelope**	**Lighting**	**Other**	**Project Description**	**Building Drawings**	**Equipment Drawings, Manuals**	**Project Quote**		**Short-term or long-term**
														Yes	**No**	
All Municipal Facilities									✓		Install LED Lighting				✓	S
Streetlight Portfolio									✓		Convert remaining HPS lighting to LED				✓	
Sports complex									✓		Convert ballfield lighting to LED				✓	
Public Works Complex										✓	Install submeters				✓	
Public Safety Complex										✓	Install submeters				✓	
Public Safety Complex										✓	Confirm utility meter multiplier					

IMPLEMENTATION STRATEGIES AND ACTIONS

GOAL 1: Improve municipal building performance.	
PSI1.1	Implement recommended energy savings projects identified in the Facilities Assessment report beginning with LED upgrade projects for all city owned buildings.
PSI1.2	Install submeters for Public Safety Complex and Public Works Complex to increase accuracy of energy data monitoring and track project results.
PSI1.3	Convert all interior lighting in municipal facilities to LED models by 2020.
PSI1.4	Review the existing capital improvement plan to identify any equipment that is otherwise due for replacement. Adopt a life cycle costing approach to equipment replacement decisions.
PSI1.5	Interview facilities maintenance staff, department heads, the city manager, the mayor, and other key staff and officials to identify any other energy-related needs or opportunities.
PSI1.6	Use the results of the facilities assessment and Portfolio Manager accounting to identify buildings that are underperforming and/or experiencing unusual spikes in consumption that may be a sign of gas leaks or malfunctioning electrical equipment.
PSI1.7	Review ongoing planning efforts including the city's master plan to identify any priority areas that may not be identified through a strictly data-driven approach.
PSI1.8	Ensure that facilities meet the minimum requirements of National Fire Protection Association (NFPA) and National Electrical Code (NEC).
GOAL 2: Identify and implement clean energy projects.	
PSI2.1	Prioritize projects identified in table C: Project Action Plan Summary and the Stantec recommended priorities.
PSI2.2	Determine ownership and rate structure for municipal streetlight portfolio.
PSI2.3	Utilize the most efficient equipment available and incorporate renewable energy into the energy portfolio of each building including back-up generation.
PSI2.4	Using the information gathered in the steps above, select a suite of projects to undertake in the short-term. Couple projects with a short return on investment with projects with a long return on investment to improve the terms of longer ROI projects and facilitate their completion.

2 FUNDING

Energy projects generally save municipalities money in the long term, but the challenges in obtaining upfront capital must be acknowledged. The steps identified in this document are recommendations geared toward avoiding impacts to the general fund and are outlined in the Action Plan located at the end of this document.

GOAL 1: INCREASE ENERGY EFFICIENCY AND RENEWABLE ENERGY FUNDING THROUGH INTERNAL AND EXTERNAL SOURCES.

GOAL 2: ESTABLISH A REVOLVING ENERGY FUND.

To enhance current efforts an overview of less well-known funding opportunities is provided in table D to support municipal energy efficiency and/or renewable energy projects.

Revolving energy funds are a promising alternative to external financing where savings can then be used to fund future energy savings projects, capturing additional capital.

Regarding additional funding options, the city has pursued various grant funded opportunities such as the EcoWorks Municipal Energy Planning program funded by the C.S. Mott Foundation.

REVOLVING ENERGY FUND EXAMPLE:

The City of Ann Arbor established a municipal revolving energy fund in 1998, investing in energy improvement projects such as LED traffic and street lighting, electric vehicles, and solar energy demonstration projects.

Since 1999 this Energy Fund invested $588,000 in projects, saved the City of Ann Arbor over $705,000 in energy savings alone, and sustained a full time Energy Manager position.

POSSIBLE SOURCES OF SEED FUNDING FOR A REVOLVING ENERGY FUND:

a. **Utility reimbursements from billing errors.**
b. **Left over maintenance funds that are not used at the end of a particular fiscal year.**
c. **Energy cost savings from energy projects recently undertaken.**
d. **Another source of funds mutually agreed upon by City decision makers.**

Table D: Project Financing Options		
Financial Source	**Eligible Projects**	**Available Funding**
Loans		
State Revolving Fund	Renewable energy and energy efficiency measures	Varies
Michigan Saves	Energy efficiency and renewable energy projects for the residential, commercial, multifamily, and public sectors	Varies
Clean Energy Credit Union	Renewable energy and energy efficiency measures	Varies
Grants		
DOE Small Grants and EERE Exchange	Residential, commercial, and municipal building energy efficiency and renewable energy measures	$1,000-$100,000; Grant-specific
Private Foundations	Diverse renewable energy initiatives	Varies
Rebates		
DTE Commercial & Industry Energy Efficiency Program	Energy efficiency improvements, equipment replacement, efficient retrofits	Varies by equipment
Alternative Options		
Tax- exempt Lease Purchase (TELP)	Energy conservation improvements	Municipality annual appropriations
Third-party Power Purchase Agreement (PPA)	Renewable energy projects i.e. solar photovoltaic	Varies
Clean Energy Ordinances	Secures millage financing for energy projects	Varies by municipality

IMPLEMENTATION STRATEGIES AND ACTIONS

GOAL 1: Increase energy efficiency and renewable energy funding through internal and external sources.	
F1.1	**Apply for applicable utility-based energy waste reduction programs and ensure all equipment purchases secure available utility incentives where relevant.**
F1.2	**Continue to take advantage of sporadic and time-sensitive grant opportunities such as the Mott Foundation funded Energy Planning with EcoWorks.**
F1.3	**Review the table of Project Financing Options located in Table D of this document for financing mechanisms that may be a good fit for a particular project or need.**
GOAL 2: Establish a revolving energy fund.	
F2.1	**Develop and adopt a municipal revolving energy fund.**
F2.2	**Identify sources for seed funding.**
F2.3	**Determine scope of the fund (i.e. single building, municipal, community-wide).**
F2.4	**Return 80% of energy cost savings from all projects to the revolving energy fund to allow for seeding of projects in the following year.**

3 STAFFING

There is currently no one point of contact or responsibility for energy efficiency or other sustainability initiatives; elected officials and staff lead these as the opportunities arise. The planning process associated with this document revealed the need for dedicated staff to lead the ongoing and future energy management and sustainability work. These tasks will be allocated to the forthcoming Facilities Manager position.

GOAL 1: INCLUDE ENERGY MANAGEMENT IN FACILITIES MANAGER SCOPE OF WORK.

GOAL 2: INCORPORATE THIS ENERGY PLAN INTO THE SCOPE OF WORK FOR THE CITY'S ENVIRONMENTAL ADVISORY COMMITTEE.

Cities that have successfully managed their energy portfolios have dedicated staff to lead the work. This is typically a staff member who has the technical skills necessary to identify key energy projects, has the authority level to move projects through the approvals process, and the financial know-how to make sure that projects fit within the budgetary constraints of a city.

For larger cities with populations of 100,000 or more, it is recommended to hire a full-time energy manager to serve on the municipal staff. For cities under 100,000 in population, a part-time energy manager is typically sufficient. This person may be on staff or be part of a third-party organization like the members of the Michigan Community Energy Partnership (MI-CEP) which includes EcoWorks, SEMREO, SEEDS, and Michigan Energy Options.

Regardless of the staffing structure for the energy manager, political buy-in from decision makers including the mayor, city manager, members of city council, and department heads is essential for making productive changes in how a city manages its energy portfolio.

The City of Berkley established an environmental advisory committee with the purpose of recommending environmentally beneficial and educational programs to the city council and city manager. The committee is made up of eight members including the City Manager who participates as a non-voting member. Incorporating this energy plan into the scope of work for the city's environmental advisory committee is recommended to complement energy initiatives developed by the city.

In the City of Berkley, the City Manager's Office, the Office of the Mayor, and the City Council have all been supportive of energy planning and establishing energy goals. Establishment of at least a part-time Energy Manager is a strong next step toward ensuring that these energy goals are appropriately scoped, brought to frui-

tion, and sustained. In the meantime, it is recommended that the city establish authority for an interim Energy Manager to coordinate energy management activities and identify the individual as a recognized resource for city staff.

The bullets below are recommended components of the job description of an Energy Manager:

- Monitor energy bills and facility performance for all of the city's holdings.
- Manage capital improvement projects related to energy efficiency or renewable energy generation.
- Lead bid processes for large-scale energy efficiency and/or renewable energy projects.
- Promote the energy vision among staff, residents, and businesses.
- Seek grants, loans, special assessments, bonds, PPAs, and/or other external funding mechanisms to implement clean energy projects.
- Support the establishment of policies and procedures that make energy efficiency and/or renewable energy projects easier to undertake in the city.
- Establish and facilitate an energy commission of local government staff and officials as well as residents who will be responsible for enacting the energy vision of the city.

IMPLEMENTATION STRATEGIES AND ACTIONS

GOAL 1: Include energy management in Facilities Manager scope of work.	
S1.1	Continue to support the City Manager's Office and Department of Public Works as the resource for energy management activities and initiatives.
S1.2	Appoint a part-time Energy Manager as an added part of a current employee's job description, as a new position within the government, or as a third-party contract.
GOAL 2: Incorporate this energy plan into the scope of work for the city's Environmental Advisory Committee.	
S2.1	Include implementation of this Energy Plan in the Environmental Advisory Committee scope of work.
S2.2	Expand members of the EAC to fill skill or knowledge gaps where necessary.
S2.3	Establish an energy sub-committee within the Environmental Advisory Committee.

4 POLICIES AND PROCEDURES

The City of Berkley is committed to clean energy initiatives. The planning process involved in this document revealed opportunities for the city to take this commitment and continue to institute written energy policy that improves sustainable design and raises awareness within the community.

GOAL 1: PROMOTE AND STRENGTHEN ENERGY MANAGEMENT POLICIES AND PROCEDURES.

GOAL 2: IMPROVE KNOWLEDGE OF ENERGY MANAGEMENT AND SUSTAINABLE DESIGN AMONG CITY STAFF AND APPOINTED AND ELECTED OFFICIALS.

The sections discussed previously including project selection and implementation, funding, and staffing, are all critical to beginning the transition to becoming a clean energy city, but changes in policy and procedures are essential follow ups to build clean energy into city operations and ensure the longevity of efforts regardless of staff turnover or election cycle.

IMPLEMENTATION STRATEGIES AND ACTIONS

GOAL 1: Promote and strengthen energy management policies and procedures.	
PP1.1	Support progress towards achieving the City's vision for sustainability and resilience by promoting clean energy initiatives.
PP1.2	Pass a resolution or policy that requires all municipal buildings to benchmark energy consumption data annually.
PP1.3	Pass a council resolution in support of adopting this Energy Plan.
PP1.4	During the City's next master plan cycle, adopt specific energy guidelines in support of ongoing energy management programs.
PP1.5	Examine procurement policies to ensure that the bidding and/or purchasing processes account for the energy efficiency of equipment and do not create a barrier to implementing clean energy projects.
PP1.6	Explore the potential for creating a dedicated Sustainability Plan or Climate Action Plan.
PP1.7	Uphold commitments to the Paris Climate Agreement goals in connection with participation in the Mayor's National Climate Action Agenda.
PP1.8	During the city's next master plan cycle, adopt energy policy guidance as a part of the Master Plan.
PP1.9	Consider development of a clean vehicle fleet plan.
GOAL 2: Improve knowledge of energy management and sustainable design among city staff, appointed and elected officials.	
PP2.1	Include information on the city's energy vision and energy management strategy in the orientation packets for all appointed and elected members of boards and commissions as well as municipal staff members.

5 DATA

The planning process revealed opportunities to benchmark energy consumption data to support project identification and reduce operating costs.

GOAL 1: INSTITUTE A DATA-DRIVEN APPROACH TO MANAGING ENERGY USAGE.

GOAL 2: ESTABLISH A PROCESS TO ANALYZE DATA TO IDENTIFY ENERGY USE TRENDS AND BILLING ERRORS.

GOAL 3: IMPROVE COMMUNICATIONS WITH FACILITY MANAGERS, UTILITY PROVIDERS, AND RELEVANT CONTRACTORS TO RESOLVE ISSUES QUICKLY.

To help stretch project dollars as far as possible and ensure the "best bang for the buck", a data-driven approach to decision making should be taken. By assessing Berkley's current annual energy consumption and dollar expenditure, it becomes possible to identify in quantifiable terms underperforming facilities, gas leaks, and sometimes even faulty equipment causing otherwise unexplained spikes in energy consumption and/or gradual increases in energy consumption that are not explained by other factors.

TIPS!

Gas leaks are an emergency and the appropriate hotline should be called immediately:

- DTE Energy Gas Leak Hotline: 1-800-947-5000

The widespread energy and financial benefits of systematically reporting and analyzing energy data with Portfolio Manager are reflected in the

HOW TO BENCHMARK:

Begin benchmarking by gathering all available information on municipal facilities including 12-36 months of energy bills, square footage, occupancy levels, and the year built. Building information can be found in the Stantec facilities assessment.

Common places to look for missing information are your facility managers, finance department, and/or your DTE account representative.

The free Energy Star Portfolio Manager tool is recommended for tracking. This tool will enable your energy manager to compare, at a glance, each building's performance against similar buildings in your region as well as with one another.

findings of a study on benchmarking and energy savings conducted by the U.S. Environmental for energy benchmarking, average energy consumption per building was reduced by 7% over the period of 2008-2011.

Protection Agency. With data from over 35,000 facilities using the EPA Portfolio Manager tool

IMPLEMENTATION STRATEGIES AND ACTIONS

GOAL 1: Institute a data-driven approach to managing energy use.	
D1.1	Identify the current utility bill gathering process, collect copies of the previous 12-36 months of energy (gas, electricity, and steam) consumption data where necessary, and enter into a spreadsheet format consistent with Portfolio Manager. If data is available, include water consumption.
D1.2	Create a Portfolio Manager account to upload all building and consumption information into the EPA's Portfolio Manager.
D1.3	Establish a process to populate energy consumption data monthly or quarterly into Portfolio Manager.
GOAL 2: Establish a process to analyze data to determine energy use trends and billing errors.	
D2.1	Examine bills from each facility for any errors or rate optimization that may be possible.
D2.2	Set a baseline year for comparison using the most complete and relevant sets of data and normalize for weather.
D2.3	Audit at least 10% of energy consumption data in Portfolio Manager for quality assurance/quality control.
D2.4	Look at each building's performance noting any energy spikes or gradual increases in energy consumption that may indicate mechanical failures or leaks.
D2.5	Look at how your facilities compare to others in the region. For any buildings that have recently had upgrades, ensure that the expected drops in energy consumption are also represented. The absence of reductions may indicate failing equipment or incorrect installation.
GOAL 3: Improve communications with facility managers, utility providers, and relevant contractors to resolve issues quickly.	
D3.1	Request any refunds for billing errors from the DTE Account Manager.
D3.2	Ensure that it is part of the energy manager's task load to review building performance quarterly to flag any new issues.
D3.3	Coordinate energy data management with Berkley Technology Advisory Committee.

6 COMMUNICATION

The City Manager's office currently uses email and meetings to communicate with staff. Fully using existing and potential channels of communication across departments and with constituents is key to the implementation of any energy plan.

GOAL 1: IMPROVE ENERGY AND SUSTAINABILITY-RELATED COMMUNICATION RESOURCES.

GOAL 2: PROMOTE AND SHARE ENERGY REDUCTION ACHIEVEMENTS WITH STAFF AND RESIDENTS.

Energy conservation as a municipal-wide strategy will be most successful when it is built into the culture of the organization. Sharing project successes and conservation tips broadly through the communications channels of the City so that there is awareness among staff, officials, and boards is encouraged. Full adoption of the energy vision will ensure that energy conservation cascades throughout the City's various operations in ways that will likely be creative and surprising.

IMPLEMENTATION STRATEGIES AND ACTIONS

GOAL 1: Improve energy and sustainability-related communication resources.	
C1.1	Highlight achievements at the municipal, departmental, and individual level and progress on Energy Plan goals by way of an annual report and submit to the Environmental Advisory Committee and the City Council.
C1.2	Distribute easy to follow tips and reminders about the City's energy vision on a regular basis (monthly or quarterly).
C1.3	Publish the final adopted version of this energy plan on the City's website.
C1.4	Explore partnerships with community and business groups to expand clean energy programs.
GOAL 2: Promote and share energy reduction achievements and projects with staff and residents.	
C2.1	Promote the city's energy vision on municipal marketing materials, the city's website, social media accounts, newsletters, through regional conferences, and/or other appropriate communication mechanisms.
C2.2	Increase communications and citizen outreach around sustainability, publicizing efforts and providing information on how citizens can get involved or replicate green initiatives.
C2.3	Consider the development of a website dashboard to report on municipal energy management achievements and progress.
C2.4	Continue reporting on energy management progress and sustainability goals via the Michigan Green Communities Challenge annually.
C2.5	Enact a department-by-department competition to reduce energy expenditures.

ACTION PLAN

In order for the Energy Plan to be implemented, the city and relevant community stakeholders must carry out the actions needed to achieve the goals and the vision for Berkley's future. The Action Plan should be updated frequently by the energy manager who will serve in an overall project management capacity and advised by the Environmental Advisory Committee. This Action Plan can be used as a checklist to acknowledge accomplishments and identify next steps which the city can consider at critical decision-making points.

Time Frame

ONGOING: Actions that require continuous monitoring or effort.

NOW: Begin work immediately upon plan adoption.

1-2 YEARS: Begin work within 1-2 years.

3-5 YEARS: Begin work within 3-5 years.

Next Master Planning Cycle: Actions recommended for next master plan update.

RECOMMENDED TASK LEADERS INVOLVED

CITY GOVERNMENT:

City Mayor
City Manager
Department of Public Works
Planning and Development
Finance
Facilities Manager / Energy Manager

BOARDS AND COMMISSIONS:

City Council
Environmental Advisory Committee
Berkley Downtown Development Authority
Planning Commission
Parks and Recreation

PROJECT SELECTION AND IMPLEMENTATION			
ACTION		**TIME FRAME**	**LEAD DEPARTMENT**
GOAL 1: Improve municipal building performance.			
PSI1.1	Implement recommended energy savings projects identified in the Facilities Assessment report beginning with LED upgrade projects for all city owned buildings.	NOW	Facilities Manager / Energy Manager
PSI1.2	Install submeters for Public Safety Complex and Public Works Complex to increase accuracy of energy data monitoring and track project results.	NOW	Facilities Manager / Energy Manager
PSI1.3	Convert all interior lighting in municipal facilities to LED models by 2020.	1-2 YEARS	Facilities Manager / Energy Manager
PSI1.4	Review the existing capital improvement plan to identify any equipment that is otherwise due for replacement. Adopt a life cycle costing approach to equipment replacement decisions.	NOW	Finance
PSI1.5	Interview facilities maintenance staff, department heads, the city manager, the mayor, and other key staff and officials to identify any other energy-related needs or opportunities.	NOW	Facilities Manager / Energy Manager
PSI1.6	Use the results of the facilities assessment and Portfolio Manager accounting to identify buildings that are underperforming and/or experiencing unusual spikes in consumption that may be a sign of gas leaks or malfunctioning electrical equipment.	1-2 YEARS	Facilities Manager / Energy Manager
PSI1.7	Review ongoing planning efforts including the city's master plan to identify any priority areas that may not be identified through a strictly data-driven approach.	1-2 YEARS	Facilities Manager / Energy Manager; Planning and Development
PSI1.8	Ensure that facilities meet the minimum requirements of National Fire Protection Association (NFPA) and National Electrical Code (NEC).	1-2 YEARS	Facilities Manager / Energy Manager
GOAL 2: Identify and implement clean energy projects.			
PSI2.1	Prioritize projects identified in table C: Project Action Plan Summary and the Stantec recommended priorities.	NOW	Facilities Manager / Energy Manager
PSI2.2	Determine ownership and rate structure for municipal streetlight portfolio.	NOW	Facilities Manager / Energy Manager
PSI2.3	Utilize the most efficient equipment available and incorporate renewable energy into the energy portfolio of each building including back-up generation.	NOW	Facilities Manager / Energy Manager
PSI2.4	Using the information gathered in the steps above, select a suite of projects to undertake in the short-term. Couple projects with a short return on investment with projects with a long return on	1-2 YEARS	Facilities Manager / Energy Manager

	investment to improve the terms of longer ROI projects and facilitate their completion		

FUNDING			
ACTION		**TIME FRAME**	**LEAD DEPARTMENT**
GOAL 1: Increase energy efficiency and renewable energy funding through internal and external sources.			
F1.1	Apply for applicable utility-based energy waste reduction programs and ensure all equipment purchases secure available utility incentives where relevant.	ONGOING	Facilities Manager / Energy Manager
F1.2	Continue to take advantage of sporadic and time-sensitive grant opportunities such as the Mott Foundation funded Energy Planning with EcoWorks.	ONGOING	Facilities Manager / Energy Manager
F1.3	Review the table of Project Financing Options located in Table D of this document for financing mechanisms that may be a good fit for a particular project or need.	NOW	Facilities Manager / Energy Manager; Finance
GOAL 2: Establish a revolving energy fund.			
F2.1	Develop and adopt a municipal revolving energy fund.	NOW	Facilities Manager / Energy Manager; Finance
F2.2	Identify sources for seed funding.	NOW	Facilities Manager / Energy Manager; Finance
F2.3	Determine scope of the fund (i.e. single building, municipal, community-wide).	NOW	Facilities Manager / Energy Manager; Finance
F2.4	Return 80% of energy cost savings from all projects to the revolving energy fund to allow for seeding of projects in the following year.	NOW	Facilities Manager / Energy Manager; Finance

STAFFING			
ACTION		**TIME FRAME**	**LEAD DEPARTMENT**
GOAL 1: Include energy management in Facility Manager scope of work.			
S1.1	Continue to support the City Manager's Office and Department of Public Works as the resource for energy management activities and initiatives.	NOW	EAC
S1.2	Hire a part-time Energy Manager as an added part of a current employee's job description, as a new position within the government, or as a third-party contract.	NOW	City Manager
GOAL 2: Incorporate this energy plan into the scope of work for the city's Environmental Advisory			

Committee.

S2.1	Include implementation of this Action Plan in the Environmental Advisory Committee scope of work.	NOW	EAC
S2.2	Expand members of the EAC to fill skill or knowledge gaps where necessary.	ONGOING	Facilities Manager / Energy Manager
S2.3	Establish an energy sub-committee within the Environmental Advisory Committee.	NOW	EAC

POLICIES AND PROCEDURES			
ACTION		**TIME FRAME**	**LEAD DEPARTMENT**
GOAL 1: Promote and strengthen energy management policies and procedures.			
PP1.1	Support progress towards achieving the City's vision for sustainability and resilience by promoting clean energy initiatives.	ONGOING	Facilities Manager / Energy Manager
PP1.2	Pass a resolution or policy that requires all municipal buildings to benchmark energy consumption data annually.	ONGOING	City Council
PP1.3	Pass a council resolution in support of adopting this Energy Plan.	ONGOING	City Council
PP1.4	During the City's next master plan cycle, adopt specific energy guidelines in support of ongoing energy management programs.	NOW	Facilities Manager / Energy Manager
PP1.5	Examine procurement policies to ensure that the bidding and/or purchasing processes account for the energy efficiency of equipment and do not create a barrier to implementing clean energy projects.	NOW	Facilities Manager / Energy Manager
PP1.6	Explore the potential for creating a dedicated Sustainability Plan or Climate Action Plan.	NOW	Planning and Development
PP1.7	Uphold commitments to the Paris Climate Agreement goals in connection with participation in the Mayor's National Climate Action Agenda.	1-2 YEARS	City Mayor; City Council; City Manager
PP1.8	During the city's next master plan cycle, adopt energy policy guidance as a part of the Master Plan.	1-2 YEARS	Facilities Manager / Energy Manager
PP1.9	Consider development of a clean vehicle fleet plan.	1-2 YEARS	Planning and Development
GOAL 2: Improve knowledge of energy management and sustainable design among city staff, appointed and elected officials.			
PP2.1	Include information on the city's energy vision and energy management strategy in the orientation packets for all appointed and elected members of boards and commissions as well as municipal staff members.	1-2 YEARS	City Manager

DATA			
ACTION		**TIME FRAME**	**LEAD**

			DEPARTMENT
GOAL 1: Improve the data-driven approach to managing energy use.			
D1.1	Identify the current utility bill gathering process, collect copies of the previous 12-36 months of energy (gas, electricity, and steam) consumption data where necessary, and enter into a spreadsheet format consistent with Portfolio Manager. If data is available, include water consumption.	NOW	Facilities Manager / Energy Manager; Finance
D1.2	Create a Portfolio Manager account to upload all building and consumption information into the EPA's Portfolio Manager.	NOW	Facilities Manager / Energy Manager
D1.3	Establish a process to populate energy consumption data monthly or quarterly into Portfolio Manager.	NOW	Facilities Manager / Energy Manager
GOAL 2: Establish a process to analyze data to determine energy use trends and billing errors.			
D2.1	Examine bills from each facility for any errors or rate optimization that may be possible.	1-2 YEARS	Facilities Manager / Energy Manager
D2.2	Set a baseline year for comparison using the most complete and relevant sets of data and normalize for weather.	1-2 YEARS	Facilities Manager / Energy Manager
D2.3	Audit at least 10% of energy consumption data in Portfolio Manager for quality assurance/quality control.	1-2 YEARS	Facilities Manager / Energy Manager
D2.4	Look at each building's performance noting any energy spikes or gradual increases in energy consumption that may indicate mechanical failures or leaks.	1-2 YEARS	Facilities Manager / Energy Manager
D2.5	Look at how your facilities compare to others in the region. For any buildings that have recently had upgrades, ensure that the expected drops in energy consumption are also represented. The absence of reductions may indicate failing equipment or incorrect installation.	1-2 YEARS	Facilities Manager / Energy Manager
GOAL 3: Improve communications with facility managers, utility providers, and relevant contractors to resolve issues quickly.			
D3.1	Request any refunds for billing errors from the DTE Account Manager.	NOW	Facilities Manager / Energy Manager; Finance
D3.2	Ensure that it is part of the energy manager's task load to review building performance quarterly to flag any new issues.	NOW	Facilities Manager / Energy Manager
D3.3	Coordinate energy data management with Berkley Technology Advisory Committee.	ONGOING	Facilities Manager / Energy Manager

COMMUNICATION			
ACTION		**TIME FRAME**	**LEAD DEPARTMENT**
GOAL 1: Improve energy and sustainability-related communication resources.			
C1.1	Highlight achievements at the municipal,	NOW	Facilities Manager /

	departmental, and individual level and progress on Energy Plan goals by way of an annual report and submit to the Environmental Advisory Committee and the City Council.		Energy Manager
C1.2	Distribute easy to follow tips and reminders about the city's energy vision on a regular basis (monthly or quarterly).	NOW	Facilities Manager / Energy Manager
C1.3	Publish the final adopted version of this energy plan on the City's website.	NOW	City Manager
C1.4	Explore partnerships with community and business groups to expand clean energy programs.	ONGOING	Facilities Manager / Energy Manager; Berkley DDA

GOAL 2: Promote and share energy reduction achievements with staff and residents.

C2.1	Promote the city's energy vision on municipal marketing materials, the city's website, social media accounts, newsletters, through regional conferences, and/or other appropriate communication mechanisms.	NOW	City Manager
C2.2	Increase communications and citizen outreach around sustainability, publicizing efforts and providing information on how citizens can get involved or replicate green initiatives.	NOW	Facilities Manager / Energy Manager
C2.3	Consider the development of a website dashboard to report on municipal energy management achievements and progress.	3-5 YEARS	Facilities Manager / Energy Manager
C2.4	Continue reporting on energy management progress and sustainability goals via the Michigan Green Communities Challenge annually.	ONGOING	Facilities Manager / Energy Manager
C2.5	Enact a department-by-department competition to reduce energy expenditures.	3-5 YEARS	Facilities Manager / Energy Manager

LIST OF APPENDICES

TBD

eco WORKS

SOUTHEAST MICHIGAN REGIONAL ENERGY OFFICE