CAPITAL IMPROVEMENT PROGRAM
City of Missoula CIP Project Request Form FY 2015-2019

Program Category:	Project Title:	13 Project #	14 Project #	15 Project #
Community Service	Energy Conservation, Climate Action and Information Technology Performance Activities		CS-18	CS-18

Description and justification of project and funding sources:

This CIP is a suite of activities intended to reduce energy consumption, save money, reduce emissions pollution and support information technology services. It is a mix of projects that intentionally mirrors the focus areas of the Conservation & Climate Action Plan (Resolution 7753): Fleet and Facilities, Internal Policies and Practices, and Renewable Energy and Offsets, and will set the course towards achieving the goals therein along with maintaining performance of essential information technology infrastructure. Implementing energy efficiency building improvements in conjunction with expanding the use of clean, renewable energy and pairing fleet efficiency with driver training amplifies both investments for maximum energy conservation, dollar savings and carbon reduction return and improves employee, public and environmental health. Projects components include:

- Fleet Efficiency
- City Hall and Fire Station 4 HVAC Energy Savings Study
- Energy Savings, Parks Department HVAC and Building Envelope
- Information Technology HVAC System
- Solar Power on City Building Study

Is this equipment prioritized on an equipment replacement schedule?	Yes	No	NA
			x

Are there any site requirements:

N/A

REVENUE

How is this project going to be funded:

Funding Source	Accounting Code	FY15	FY16	FY17	FY18	FY19	Funded in Prior Years
General Fund (Bond/Equip lease)		174,000	91,765	40,560	55,680		
		174,000	91,765	40,560	55,680	-	-

EXPENSE

How is this project going to be spent:

Budgeted Funds	Accounting Code	FY15	FY16	FY17	FY18	FY19	Spent in Prior Years
A. Land Cost							
B. Construction Cost							
C. Contingencies (10% of B)							
D. Design & Engineering (15% of B)							
E. Percent for Art (1% of B)							
F. Equipment Costs		90,000	91,765	40,560	55,680		
G. Other		84,000					
		174,000	91,765	40,560	55,680	-	-

OPERATING BUDGET COSTS

Does this project have any additional impact on the operating budget:

Expense Object	Accounting Code	FY15	FY16	FY17	FY18	FY19	Spent in Prior Years
Personnel							
Supplies							
Purchased Services	231		(3,528)	(12,600)	(21,672)		
Fixed Charges							
Capital Outlay							
Debt Service							
		-	(3,528)	(12,600)	(21,672)	-	-

Description of additional operating budget impact The savings under supplies above is the estimated cost savings of the Fleet Efficiency component of this CIP project. The estimate contain assumptions. It is unknown what the actual cost savings will be when implemented. All savings are projections based on best information available. See Eco Fleet Support page, column saving/year and notes for more detail. It is anticipated that savings will result from each component of this CIP. Those savings will be determined as the studies are completed and as the projects are designed, developed and scoped.

Responsible Person:	Responsible Department:	Date Submitted to Finance	Today's Date and Time	Preparer's Initials	Total Score
Jack Stucky	Veh. Maint	3/18/2014	3/17/2014 0:00	js	48

CAPITAL IMPROVEMENT PROGRAM

Project Rating

(See C.I.P. Instructions For Explanation of Criteria)

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Qualitative Analysis	Yes	No	Comments
1. Is the project necessary to meet federal, state, or local legal requirements? This criterion includes projects mandated by Court Order to meet requirements of law or other requirements. Of special concern is that the project be accessible to the handicapped.	X		This project is necessary to meet Resolution 7753 that adopted the Municipal Conservation & Climate Action Plan.
2. Is the project necessary to fulfill a contractual requirement? This criterion includes Federal or State grants which require local participation. Indicate the Grant name and number in the comment column.		X	
3. Is this project urgently required? Will delay result in curtailment of an essential service? This statement should be checked "Yes" only if an emergency is clearly indicated; otherwise, answer "No". If "Yes", be sure to give full justification.		X	
4. Does the project provide for and/or improve public health and/or public safety? This criterion should be answered "No" unless public health and/or safety can be shown to be an urgent or critical factor.		X	Reducing energy and fuel consumption and deploying clean, renewable energy reduces the amount of harmful emissions associated with fossicl fuel energy sources and greenhouse gas emissions, helping to mitigate the associated negative impacts to human health including asthma and respiratory diseases, heart disease, and mercury-related neurological damage.

Quantitative Analysis	Raw Score Range	Comments	Weight	Total Score
5. Does the project result in maximum benefit to the community from the investment dollar?	(0-3) 3	This project is part of our energy savings, clean air, carbon reduction effort. Energy and fuel efficiency and conservation projects directly result in dollar savings. Further, the energy generated by City renewable energy installations stabilizes the price and creates an exponential savings over time as purchased utility costs incrementally increase. Finally, these projects have positive impacts on public and environmental health.	5	15
6. Does the project require speedy implementation in order to assure its maximum effectiveness?	(0-3) 2	As soon as the projects are completed the energy and fuel savings and associated cost savings can begin. Additionally, portions of this project replace antiquated HVAC components that will fail in the near future. Further, taking quick action will reduce harmful air particulate and emissions pollutants, improving public health and environmental quality. Finally, completed projects keep the City on course to achieve the time sensitive goals of the Conservation & Climate Action Plan.	4	8
7. Does the project conserve energy, cultural or natural resources, or reduce pollution?	(0-3) 3	Energy conservation and pollution reduction are key outcomes of this project. Efficient buildings and fleet along with increased use of renewable energy direclty results in lowered demand for fossil fuel use (natural resources and energy), and in turn the pollution from building operation and vehicle use. The energy savings from IT HVAC efficiencies may by offset by increased cooling demand.	3	9
8. Does the project improve or expand upon essential City services where such services are recognized and accepted as being necessary and effective?	(0-2) 1	This project promotes healthier, more productive workplaces and public buildings. The GPS fleet portion improves City services by shortening response times with efficient staff deployment and route optimization. Also, it allows more efficient service planning (mowing, trash, maintenance, inspections, etc.). Finally, the tools provided by the implementation of this project can improve employee and public safety, reduce traffic accidents and decrease wear-and-tear on vehicles. Finally, improving IT HVAC function will help to safeguard server failure which would result in a disruption of multiple City services.	4	4
9. Does the project specifically relate to the City's strategic planning priorities or other plans?	(0-3) 3	This project specifically relates to the City's Conservation & Climate Action Plan that was adopted by City Council in January 2013. The Plan sets the goal for municipal operations to be carbon neutral from the 2008 baseline by 2025. Interim goals include 10% reduction by 2015, 30% reduction by 2017 and 50% reduction by 2020.	4	12
			Total Score	48

	FY15	FY16	FY17	FY18	Financing
City Hall/Fire 4 Study	$42,000.00				Bond
Solar Study	$42,000.00				Bond
GPS Unit/Install		$7,975.00	$19,140.00	$19,140.00	Equip Lease
GPS Service		$6,300.00	$21,420.00	$36,540.00	Bond
Insulation	$35,000.00				Equip Lease
Park HVAC		$77,490.00			Equip Lease
IT HVAC	$55,000.00				Equip Lease
	$174,000.00	**$91,765.00**	**$40,560.00**	**$55,680.00**	

Fleet Efficiency and Eco Driving

Funding this project will expand the use of GPS technology on fleet vehicles.

Phase One FY 2016: $14,275
Purchase and Install 25 Vehicle Path GPS Units ($7,975)
Purchase monthly tracking and reporting subscription service ($21/month x 25 units x 12 months = $6300)

Phase Two FY 2017: $40,560
Purchase and Install 60 Vehicle Path GPS Units ($19,140)
Purchase monthly tracking and reporting subscription service ($21/month x 85 units x 12 months = $21,420)

Phase Three FY 2018: $55,680
Purchase and Install 60 Vehicle Path GPS Units ($19,140)
Purchase monthly tracking and reporting subscription service ($21/month x 145 units x 12 months = $36,540)

Simple Payback Calculations:

Vehicle Path GPS	DATA	Savings/year	Notes
Project Cost (Phases One - Three)	$110,515.00		
Phase One	$14,275.00	$3,528.00	Assumes 7% of entire fleet
Phase Two	$40,560.00	$12,600.00	Assumes 25% of entire fleet
Phase Three	$55,680.00	$21,672.00	Assumes 43% of entire fleet
Project Annual Savings after Phase 4 completed* (6,192 gallons)	$21,672.00		
Simple Payback	5.10 years		

*Assumes that 145 vehicles/equipment are outfitted with GPS or 43% of total fleet. Based on an estimated 8% reduction in total fleet fuel use (unleaded and diesel) from FY2013 records (180,000 gallons, rounded down) @ a blended unleaded diesel cost of $3.50/gallon. These are only estimates without knowing future fuel costs or which vehicles/pieces of equipment will be chosen.
Math: 180,000 gallons x 43%=77,400 gallons. 77,400 x 8% reduction = 6192 gallons. 6192 gallons x $3.50/gallon= $21,672

* It is unknown what the actual cost savings will be when projects are implemented. All savings are projections based on best information available.

City Hall and Fire Station 4 HVAC Energy Savings Study

Budget: $42,000
Fiscal Year: 2015

Funding this CIP project will enable a team of HVAC engineers to explore (research and design) ways to make City Hall and Fire Station 4 more energy efficient and environmentally friendly. The goal is to reduce energy consumption, save money and reduce greenhouse gas emissions. This initial funding is for research and design only. These two buildings were selected based on high consumption and high energy costs as compared to other City buildings. The end goal of this project may be ground water cooling systems and more efficient heating systems. Some of the existing boilers are not as efficient as the new models. It may be possible to replace old larger boilers with smaller more efficient boilers. This project may include upgrading air handling controls to reduce the amount of lead and lag time during heat exchange periods. This project may also include digital controls that will enable us to program occupied and non-occupied temperature settings. We could then reduce energy consumption during non-occupied periods.

Energy Savings, Parks Department HVAC and Building Envelope

Total Budget: $112,490
FY2015: $35,000 (Insulation Upgrade)
FY2016: $77,490 (HVAC System)

We know the HVAC system in the Operations building at 100 Hickory Street is ancient and less than efficient. Most of the HVAC components at this site are old style pilot light forced air heating units. At my request, Johnson Controls Inc. (the current service contractors) made the following recommendations to upgrade the antiquated HVAC system: West Offices Furnace Replacement #1, $7,250, West Offices Furnace Replacement #2 $7,425, East Offices Furnace Replacement $7,850, West Offices Furnace #2 with zoning package $7,040, Unit Heater Replacements (5) $16,020,
Infrared Heating System for Bay 6 Main Shop $10,140, Infrared Heating for Bay 3 Southeast Garage $5,075, Infrared Heating System for Wood Shop $5,075, Network Supervisor Controller $11,615.
The total cost of all upgrades to this HVAC system is $77,490.

The second portion of this project includes an insulation package. We have found that upgrading the insulation package is one of the best values in terms of energy savings. The parks building at 100 Hickory Street currently has inadequate insulation. This insulation upgrade will cost $35,000.

We will experience a positive reduction in the cost of energy used by the current Parks Department HVAC system. The age and the condition of the existing system will mandate upgrades in the near future. The energy and cost saving is a bonus to needed upgrade.

This project is centered around reducing energy expenses and improving air quality. The HVAC portion of this project is upgrading components that will fail in the near future. The HVAC system in this building is ancient. The upgraded components will be more energy efficient. In Fy 13 Parks paid $12,563 in utility bills for this building. Insulation and building envelopes are excellent energy savings projects. The insulation portion of this project is estimated to save about $1,400 per year.

The project was created for energy savings and improved air quality. The current pilot controlled forced air style heating components use significantly more energy than the newer more efficient units. If we can get half the savings from the infrared heating units that we did in the Central Maintenance Facility, this project will result in a significant energy reduction.

Information Technology HVAC System

Budget: $55,000
Fiscal Year: 2015

Funding this project will provide redundant 5 ton mini split cooling units for the City Hall I. T. room. The existing system does not provide adequate cooling for the room resulting in server alarms going off for overheating conditions. Basically, we will be setting the I.T. area up with two independent - redundant systems. They would alternate use under normal operational conditions and at times of high demand operate simultaneously. This would provide a redundancy shield and enable us to meet the spring and fall periods of exceptionally high demand.

In addition to the overheating concerns in the Information Technologies areas, there have been several indoor air quality issues. To date, there have been no air quality test results that substantiate these concerns. However, this would be a good time to look at any areas that could be improved.
This is an energy friendly project with upgrades to more efficient cooling components, however the requested increase in cooling temperatures may off set the efficiency gains.
This project is border line emergency. Failure to do this project could result in the loss of servers and information technologies. We are receiving regular after hour alarm calls to the server room for over heating. The only reason this has not been a catastrophe is rapid response and problem solving. If on the next alarm call we are unable to be timely for whatever reason, it could result in overheating and server room component failure.
Time increases the exposure to an overheating episode that could result in our losing electrical components in the server room.
A server failure could disable the City of Missoula significantly. This project is hopefully a safeguard to a detriment to essential services.
This project will "increase organizational responsiveness internally and externally, including emergency preparedness". This project is about asset preservation and improved response to public service.
The energy use and saving from the new cooling units may be off set by the request for increased cooling demand.

Solar Power on City Buildings Study

Budget: $42,000
Fiscal Year: 2015

Funding this CIP project will enable a team of solar power engineers to analyze and recommend ways to increase the production of and expand the use of clean, renewable energy on City buildings. This initial funding is for research and design only and will explore both Solar Photovoltaic (PV) and Solar Thermal hot water heating to offset or reduce our dependence on traditional energy sources. Deploying renewable, solar energy generation with our ongoing energy efficiency building improvements amplifies both investments for maximum energy conservation, dollar saving and carbon reduction return.

The leverage factor or pay back of this project will be determined by the engineering research. Technological advances in Solar Power and decreasing equipment costs have greatly improved the benefits and shortened the payback periods. Further, the energy generated by City installations stabilizes the price and creates an exponential savings over time as purchased costs incrementally increase.

As soon as the project is completed the energy savings and associated cost savings can begin with implementation. Because of the project potential, installation will likely requires phases. The sooner we study that potential, the sooner we can plan for implementation to move towards achieving the goals in the Conservation & Climate Action Plan

The function of this project is energy conservation through on-site clean, renewable energy production which reduces pollution. Clean, renewable energy reduces the amount of harmful emissions associated with fossil fuel energy sources and greenhouse gas emissions, helping to mitigate the associated negative impacts to human health including asthma and respiratory diseases, heart disease, and mercury-related neurological damage.