

Team Information

Project Name

Water conservation and spare parts reduction

Team Members

Minimum: 3; Maximum:10

	Name	Department	Division
1	Robert Miller, MSI	ERDCC Maintenance	DAI-DOC
2	Julie Bell, DWO	ERDCC Maintenance	DAI-DOC
3	Dave Dooley, MWII	ERDCC Maintenance	DAI-DOC
4	Paul Coleman, MSI	ERDCC Maintenance	DAI-DOC
5	Rone Henson, MSI	ERDCC Maintenance	DAI-DOC
6	Kelly Krieger, ET	ERDCC Maintenance	DAI-DOC
7	Jeremy Lynn, MSII	ERDCC Maintenance	DAI-DOC
8	Billy Osborne, ET	ERDCC Maintenance	DAI-DOC
9	Steve Reminger, ET	ERDCC Maintenance	DAI-DOC
10	Bob Tuttle, MWII	ERDCC Maintenance	DAI-DOC

Your Pitch

What problem are you addressing? (No more than 200 words)

Water is the most valuable resource on earth and it is often taken for granted. Municipalities lose 1/3 of their water due to leaks. The problem at ERDCC includes wasting water and using expensive proprietary parts. The current plumbing parts are purchased at a cost of \$60,000.00. ERDCC water usage was \$512,111.47 from 01-2018 through 12-2018 plus additional sewer charges. The main problem is the amount of water used during showers.

What is your primary measure for the problem?

Primary measure	Current Status	Target
We will use water cost from 01/2018 through 12/2018 and funds spent for plumbing parts from 1/2018 through 12/2018 as our baseline.	ERDCC uses 134,004,700 gallons of water at a cost of \$512,111.47 and \$60,000 in spare plumbing parts. The sewer costs would be \$656,623.03 if measured at \$0.0049 per gallon.	Reduce water consumed by 15% and spare parts by 50%.The saved water cost will be \$76,816.72 and spare parts \$30,000.00 The sewer fee savings will be \$98,493.45 if charged at \$0.0049 per gallon.

* Measures should follow SMART principle: Specific-Measurable-Actionable-Relevant-Timebound.

[OA's guidance on performance metrics](#)

What is the root cause of the problem? (No more than 200 words)

1. Showers can run an unlimited amount of time. 2. Due to old technology ERDCC has a high component failure in the water system. The old technology does not allow the facility to control water usage which leads to waste. 3. The showers use a high volume shower head which have a flow of 2.5 gallons of water per minute. 4. The old nylon tubing has leaks. 5. The offenders flush their toilets several times a day for trash removal thus causing water waste.

What is your proposed solution? (No more than 200 words)

1.We will control water usage by a Programmable Logic Controller (PLC) ladder logic program. The PLC program will control the amount of time the shower will run as well as off time. 2. The current proprietary valves and push buttons will be replaced by more efficient, less expensive parts. 3. The new valves will reduce shower water from 2.5 gallons per minute to 1 gallon per minute. 4. To end the shower leaks we are replacing the old nylon tubing currently in use with new nylon tubing. 5. Toilets will be controlled by a PLC, as well as limit flushes. This action will keep offenders from flushing trash, contraband, (such as drugs) and flooding cells for entertainment.

Project Plan

What are the major activities and milestones to deliver your solution? (Additional steps may be added)

	Activity	Milestone or deliverable	Due date
1	Write PLC ladder logic programs to control water usage.	Test PLC ladder logic program.	Completed 6/7/2019
2	Provide a parts list needed for project for housing unit 1 via a purchase order request.	Have purchase order approved and order parts.	07/03/19
3	Install PLC, switches, valves, and wiring.	Test operation of showers in housing unit 1.	07/19/19
4	Repeat steps 2 and 3 for housing unit 2 through 11.	Test operation of showers.	12/2019
5	Evaluate return on investment in 6 months.	Water usage drops by 15% and part usage will drop by 50%.	06/2020
6	We will use money we saved in spare parts to retrofit the toilets	Upgrade toilets in housing unit 1.	07/2020
7	As funds permit, continuously update toilets.	Update all toilets at ERDCC. Once other housing units are upgraded we can recognize even more water savings.	12/2021 (if additional funds are not allocated to us)
8			

Required Resources and Support

What is the expected project duration? Choose one from the list below.

Medium term (4-6 months)

How many people will be required to finish the project in the given duration? Choose one from the list below.

Small (<4 people)

Does your project require any specialized skills to complete? If so, explain. (No more than 50 words)

We are very lucky to have team members with extraordinary skill sets far beyond their job requirements. No outside contractors are needed to complete our project.

Does your project require any statutory change to complete? If so, explain. (No more than 50 words)

No

Will the costs of the project exceed your current budget? If so, explain. (No more than 50 words)

No. However expansion to retrofit toilets and sinks now would require an addition \$240,000.00

Are there other important factors for successful implementation of your project? (No more than 50 words)

We need to reinvest part of the savings to implement the toilet and sink project. If this project was implemented across the state of Missouri our fellow Missourians would enjoy a substantial saving within a year of completion.

Additional Materials

Please list any additional materials you have provided.

	Brief description
1	PowerPoint of project
2	PDF of our Speech
3	PDF of our Fact Sheet