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## Local Government Interim Committee

66th Montana Legislature

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TONI HENNEMAN, Lead Staff  
JULIE JOHNSON, Staff Attorney  
BRI NORDHAGEN, Secretary

January 15, 2020

TO: Local Government Interim Committee (LGIC) Members  
FROM: Toni Henneman, LGIC staff

Committee Members,

The following materials describe an alternative system, a total incineration unit manufactured by EcoJohn, that has been approved by DEQ through a deviation request and is scheduled to be installed in the spring of 2020. Since the system was mentioned at both the September and November meetings, this information has been included in your mailing to further explain the unit.

The system is designed to fully incinerate both black water (toilet waste solids) and gray water (sink/shower/laundry water), alleviating the demand for a drain field.

This particular system can run on propane, natural gas, or diesel, with slight cost variances between the different types of fuel.

The following information on system costs is taken from the manufacturer's [website \(https://shop.ecojohn.com/products/septicjohn-septic-alternative-wastewater-incinerator\)](https://shop.ecojohn.com/products/septicjohn-septic-alternative-wastewater-incinerator).

Smallest total incinerator unit – 15-30 gallons per day/2 people  
\$10,995 - Natural gas/propane  
\$11,495 - Diesel

Mid-size total incinerator unit – 45-60 gallons per day/4 people  
\$14,995 - Natural gas/propane  
\$15,495 - Diesel

Large total incinerator unit – 90-150 gallons per day/8 people  
~\$25,000

Other incinerator manufacturers exist, and this overview is not meant to be exhaustive. The EcoJohn model was researched since it is the specific design that was granted a deviation by the department.

 **ECOJOHN**®

# FAMILY Series

A Household Sewage Incinerator System



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# FAMILY Series

## Introduction

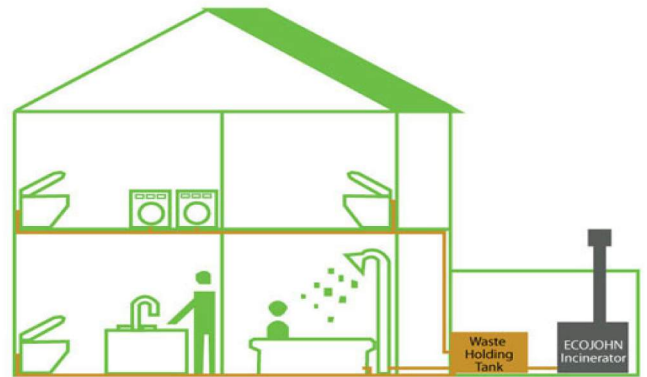
## A Household Sewage Incinerator System

ECOJOHN® is a manufacturer of green and efficient household sewage incinerator systems that are designed for applications where regular sewer lines or septic tanks are not available or too expensive to install. More specifically, in many residential areas, septic tanks are failing and contaminate our precious land; in many other remote locations, the cost of installing a septic system is too expensive and hence make it almost impossible to build a house in such location; also, due to more stringent environmental regulations, many properties that are too close to a lake or river, are not allowed to install any septic tanks.

Thus whether one has a failing septic tank and looking for a septic alternative, or a person needs a system for a new build, ECOJOHN® has solutions that can be installed without any environmental impacts. No tanks need to be installed in the ground if that is unwanted, and the systems can process all black and greywater. The size of incinerator depends on how much wastewater needs to be processed per day.

## How does it work

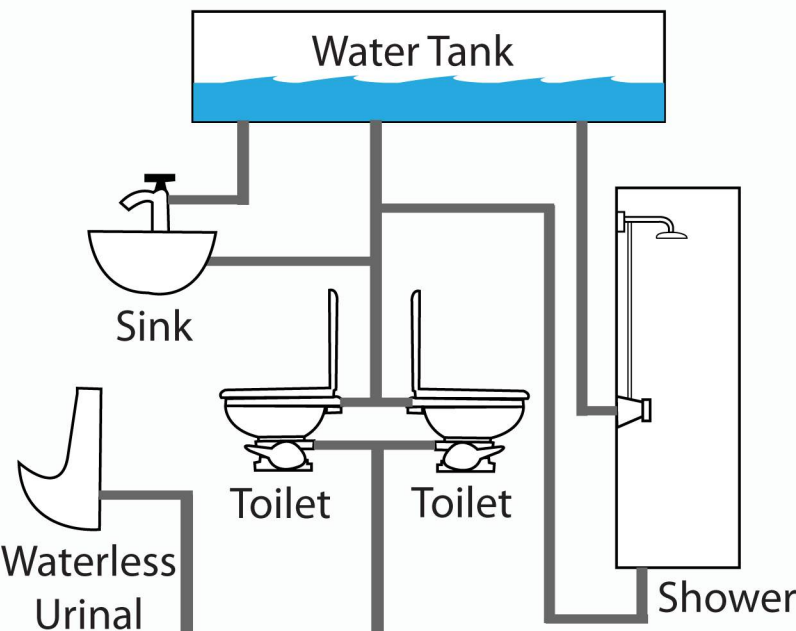
All fixtures including toilets, bathrooms sinks, kitchen sinks, showers, dishwasher and washing machine can get plumbed like a standard house installation.



*No more pump out*



All sewage needs to be gravity fed to a holding tank, which can be installed in-ground or above ground



The holding tank can be installed in ground or above ground. If the tank is in ground, a sewage transfer pump will pump sewage up to a secondary tank that gets installed close to the incinerator. A level sensor is connected to the control board, and a macerator pump is connected between holding tank and incinerator

A control board monitors the operation and controls the burn times and when to put itself in a standby mode



Access door to burn chamber - This is where one cleans out the sterile ashes

# Fuel / Power / Environment

The amperage draw is very low and the systems can run completely off grid if required. In addition to DC/AC power, some fuel is also required to run the system. There are three choices of fuel available.

- Natural Gas
- Propane
- Diesel/Kerosene
- 12VDC with Solar System
- 120VAC
- 240VAC

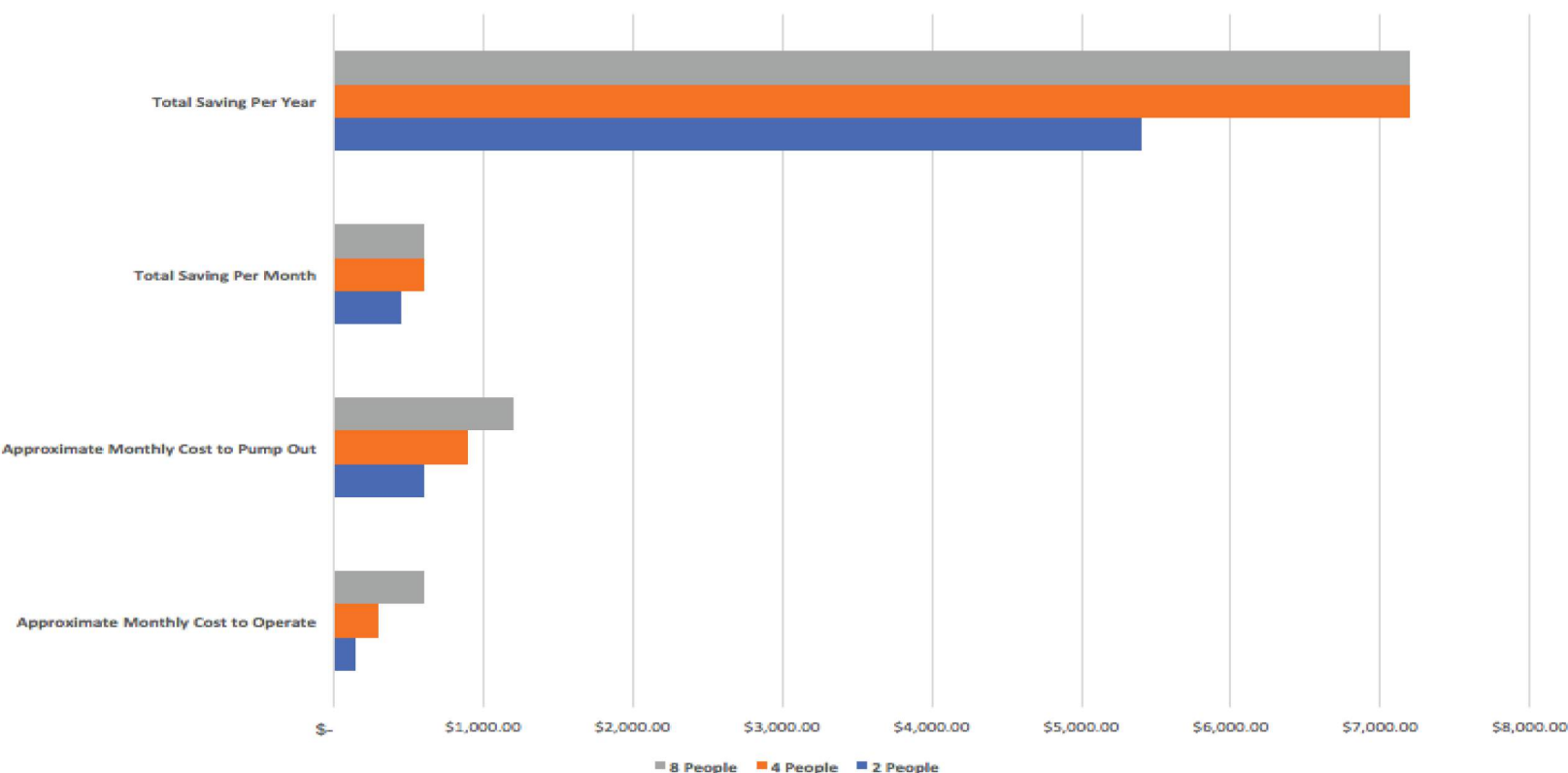
Even though, some fuel is required, the carbon footprint is minimal. The exhaust from the systems is below EPA standards and will not cause any harm to the environment. The ashes from the sewage incineration process is sterile and can be distributed to the soil if needed. It can also be vacuumed out and safely be disposed of.

## Operating Cost

The operating cost per unit is related to the amount of sewage that needs to be processed per week. The more remote location, often the more difficult and costlier it is to pump out a holding tank or get any permits for installing a septic tank. The operating cost is also related to the local fees of fuel. One of many advantages of these units is the fact that they don't require any personnel to run the systems and except a small fuel cost there is not much more cost to operate them. Below is a graph showing how quick your ROI can be if you install one of our systems. Note, the operating cost and ROI may differ in different regions and applications.

<b>ALL SEWAGE (BLACK &amp; GREYWATER)</b>		
No of People in Household Full Time Living	Total Gallons to Process/day	Suggested Model
2	40-50	WC32/WC48
4	80-100	WC48/WC64
8	160-200	WC64
<b>BLACK WATER ONLY (TOILETS)</b>		
No of People in Household Full Time Living	Total Gallons to Process/day	Suggested Model
2	5-10	WC5 Mini/WC5
4	10-20	WC5/WC32
8	20-40	WC32/WC48

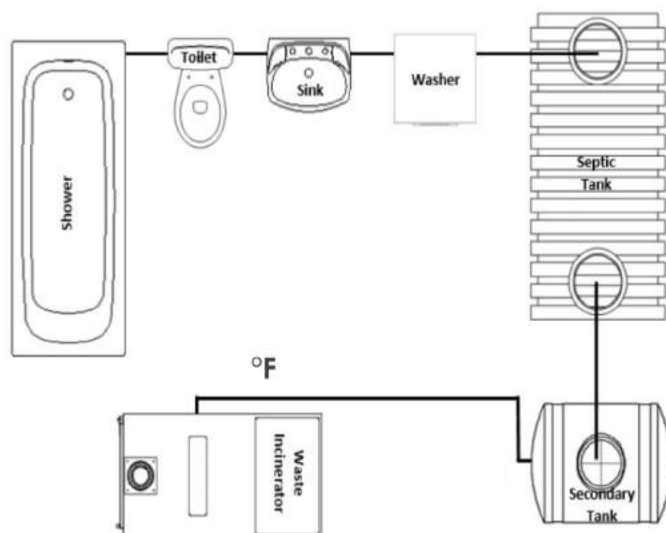
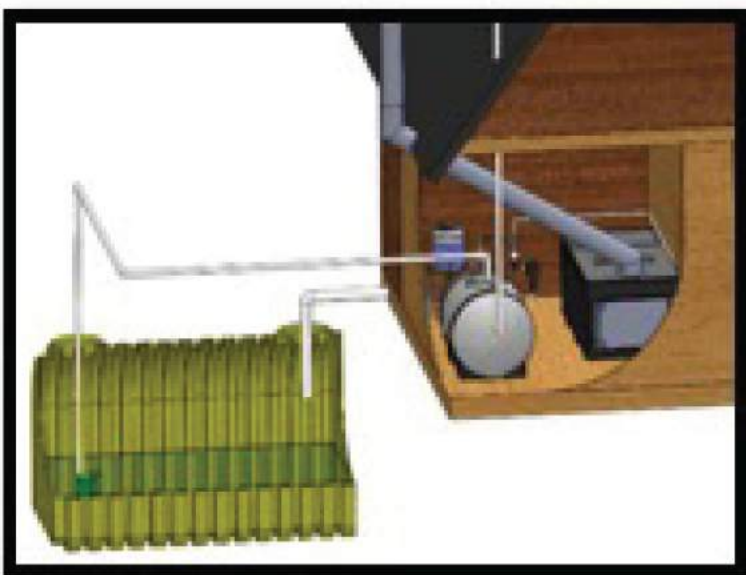
**Cost of Operation All Sewage - ROI**



# Layouts/Installations

The installation of the system can be done very quickly compared to installing a septic system/leach lines. One has an option of installing the holding tank in the ground or above ground. If an in-ground tank is being used, an effluent waste transfer pump needs to be installed inside the waste tank. The control system on the incinerator will monitor the level in the holding tank and when needed sewage will get pumped to a secondary smaller holding tank that is placed close to the incinerator. Waste is finally being portioned into the incinerator chamber through a macerator pump (between secondary tank and incinerator).

If an above ground holding tank is being used, a macerator will pump in waste directly form the waste holding tank to the incinerator chamber.



The incinerator can be installed in a various location, such as: basement, crawl space, secondary floor, or an outside building/shed. If system is being installed outside, the incinerator must be protected from rain and snow, so a weather proof building/structure is recommended. A minimum of 1ft clearance is required in front of the short-ends of the incinerator. This is where one accesses the burner or ashtray.

Furthermore, it should not be operated in an area where there is a risk of an accumulation of flammable vapors or dust. The chimney has to be a minimum of 6 ft long. It can go vertically or horizontally out through the wall and then vertically up along the wall outside.

## Models & Capacities

WC5: 35 Gal/Day

WC32: 75 Gal/Day

WC48: 150 Gal/Day

WC64: 300 Gal/Day

## Safety and Emission

Each incinerator leaving the ECOJOHN® factory goes through several meticulous testing procedures to monitor quality control and ensure a top-quality design and product. The products have been approved and certified by several worldwide testing agencies. In addition, each unit is equipped with backup alarm systems and safety features that will shut unit down and send an alarm if anything needs to be serviced.

The systems are equipped with very efficient burners that ensure safety, reliability and low emission. The exhaust air puts out minimal emission and are below any EPA standards. If the installation is located in a very critical area and one wants to make sure the exhaust air clean and no odor is present, ECOJOHN recommends adding its special deodorizer dosing kit (Royal Mist), that ensures a nice scent will be exiting the flue stack during operation. This is only recommended in very heavy sewage installations. Most installations won't need the Royal Mist kit.

