Pathways to Permit Innovative Onsite Systems

Overcoming the Complexities of Permitting Novel Systems

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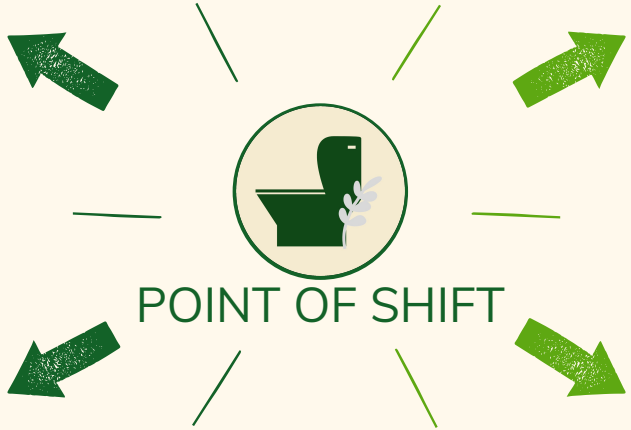
Point of Shift | A Circular Sanitation Design Consultancy

On the Ground Consumer Insights

We design circular systems for individual residents, eco-villages and communities.

- Assessments
- Applying Permits
- System Design and Implementation



The lessons learned from each workstream feed and support the other.

Scaling Circular Technologies

We help innovative companies to design new products, enter new markets and scale.

- Growth Strategy
- Market Entry
- Designing + Testing New Products

The US Market for Innovative Onsite Systems

Why Are Innovative Onsite Systems Desired?

- Reduce Nutrients in Sensitive Areas
- Reuse Water
- Implement Sustainable Sanitation
- Develop in areas with high water tables

What Innovative Onsite Technology is on the Market?

- Advanced Treatment Units
- Greywater Treatment and Recycling
- Compost Toilets
- Biodigesters
- Blackwater Treatment
- Urine Diversion + Treatment

Three Pathways for Permitting

The Certification Pathway (i.e. NSF 245)

States Include Certifications in Regs → Tech Certified by Third Party → Tech Included in Onsite Design Permit

Alternative/ Innovative Technology Permit

Engineer submits an application for system to be considered an innovative technology to test → Technology is piloted, monitored by state → If successful, tech can be implemented across state

Individual Variances

Engineer submits onsite design with request for variance, on how design does not mean existing code → Technology implemented on one site, but sets a potential precedent

The Certification Pathway (i.e. NSF 245)

States Include Certifications in Regs → Tech Certified by Third Party → Tech Included in Onsite Design Permit

	Overview
ISO 30500	Non-sewered sanitation systems tested for performance of: safe solid discharge or reuse, air emissions, odor and noise. More utilized internationally also can be referred to as ANSI/IAMPO/CAN 30500.
NSF 40	Residential onsite systems between 400 and 1500 gallons. Class I must achieve a 30-day avg. effluent quality of 25 mg/L $CBOD_5$, <30 mg/L TSS and pH 6-9.
NSF 245	Same requirements of NSF 40 plus a 50% or more reduction for total nitrogen

**NSF Advanced Onsite Wastewater Treatment Certification Program [Source]*

The Certification Pathway (i.e. NSF 245)

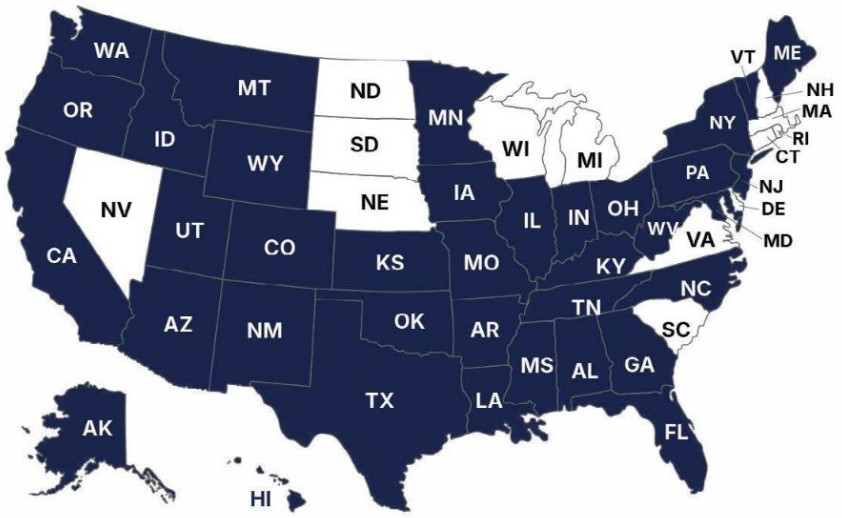
States Include Certifications in Regs → Tech Certified by Third Party → Tech Included in Onsite Design Permit

	Overview
NSF 41	Non-liquid saturated treatment units (compost toilets), classified as day-use park, cottage (seasonal) and residential systems, includes field and laboratory testing, with effluent criteria for liquids, solid end products and odor control.
NSF 350	Wastewater and graywater reuse systems <1500 gallons per day. Effluent quality criteria is suitable for indoor use such as toilet + flushing, irrigation.

**NSF Advanced Onsite Wastewater Treatment Certification Program [Source]*

NSF 40 and NSF 245 Adoption

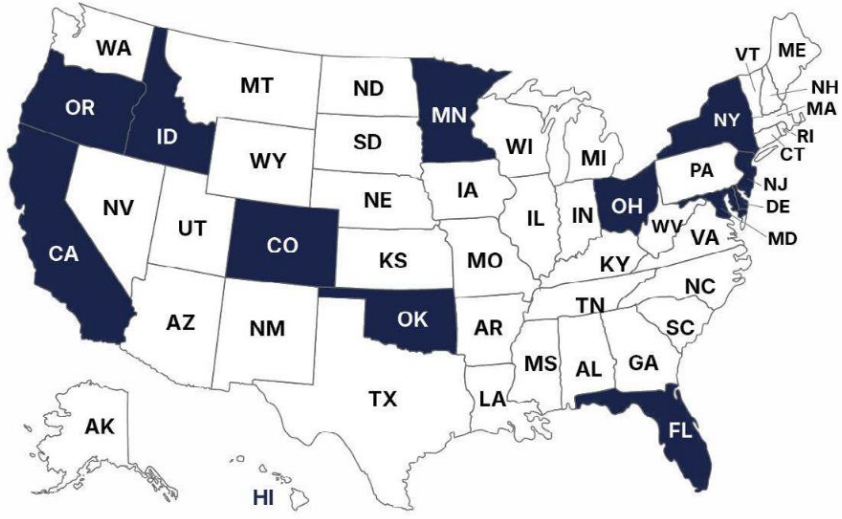
Acceptance and Adoption of NSF/ANSI 40



States that have adopted or specified NSF/ANSI 40*

*Local Requirements may still apply.

Acceptance and Adoption of NSF/ANSI 245



States that have adopted or specified NSF/ANSI 245*

*Local Requirements may still apply.

Alternative/ Innovative Technology Permit

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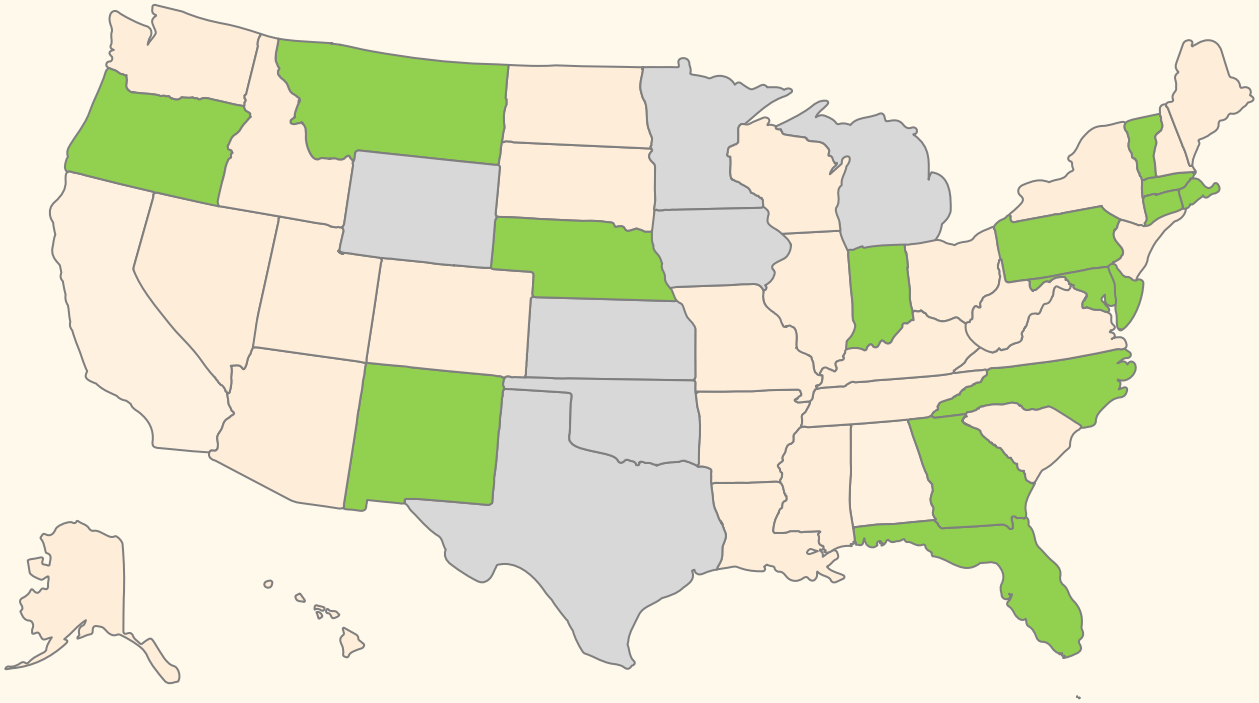
State	Overview
New Mexico	Code 20.7.3.601 |New Mexico allows alternative and experimental permits for onsite blackwater treatment. Based on the soil conditions, it lists various levels of treatment required of blackwater systems with precise performance-based requirements. 1. Secondary Treatment Standard(BOD, TSS) 2. Tertiary Treatment Standards (Nutrient (N) Removal), 3. Disinfection Treatment Standards (Coliform, E.Coli)

Alternative/ Innovative Technology Permit

Engineer submits an application for system to be considered an innovative technology to test → Technology is piloted, monitored by state → If successful, tech can be implemented across state

State	Overview
Florida	Rule 64E-6.0295 | Florida defines an innovative system as “an onsite sewage treatment and disposal system that, in whole or in part, employs materials, devices, or techniques that are novel or unique and that have not been successfully field-tested under sound scientific and engineering principles under climatic and soil conditions found in this state”. ● Clear application process ● 5 year testing and monitoring process

Innovative Permit Availability in the US



Strong pathway for innovative technologies

Alternative or innovative in the code

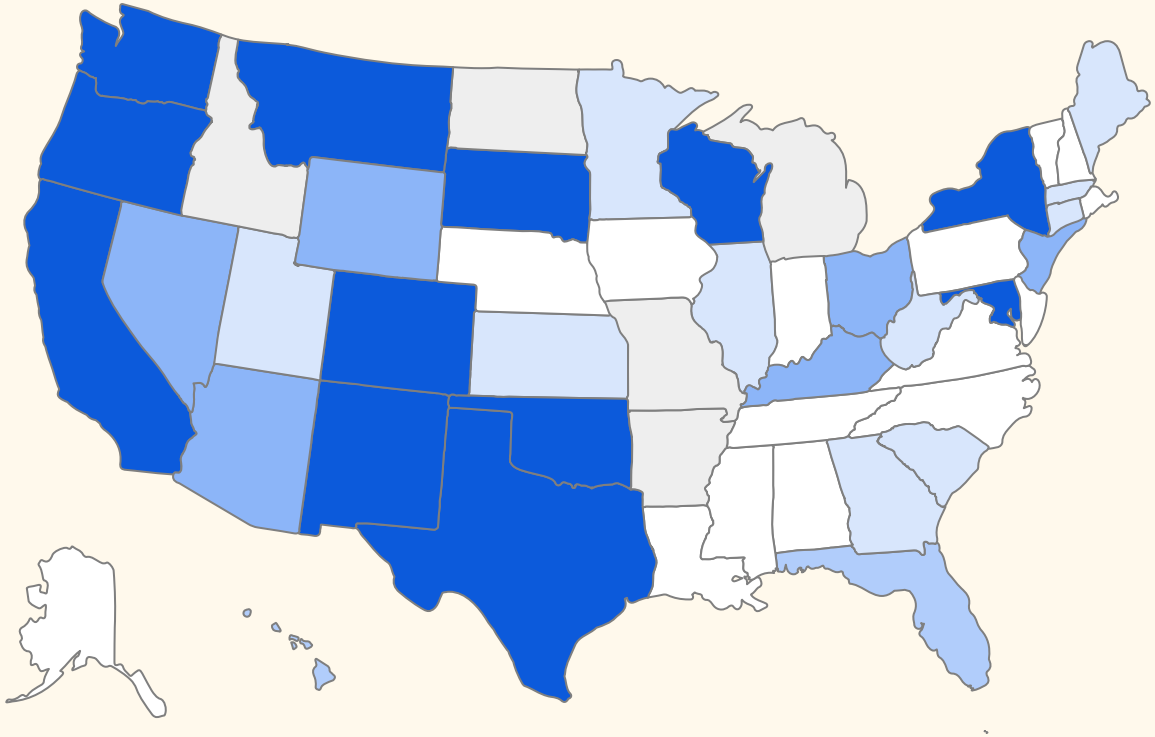
No pathway at state level

Map Created by Point of Shift, 2024

Existing Pathways for Innovative Systems | Unique Opportunities in Individual States

State	Innovative System	Overview
Vermont 	Urine Diversion	Due to the efforts of Rich Earth Institute, VT allows for urine diversion to be installed in houses, collected and treated by pasteurization.
Washington 	Greywater Treatment	WA utilizes a tiered system for requiring different levels of treatment for various types of greywater (greywater, light, dark)
Montana 	Compost Toilet + Greywater Treatment	MT has a specific code that allows a complete system to include a compost toilet paired with a greywater treatment system.
Maryland 	Nitrogen Removal Required in Sensitive Area	MD like many states have required the implementation of nitrogen removal technologies to protect surrounding ecosystems.

Graywater Reuse Regulations Across the US



Reuse for irrigation AND onsite toilets

Reuse for irrigation OR onsite toilets

Reuse with subsurface irrigation

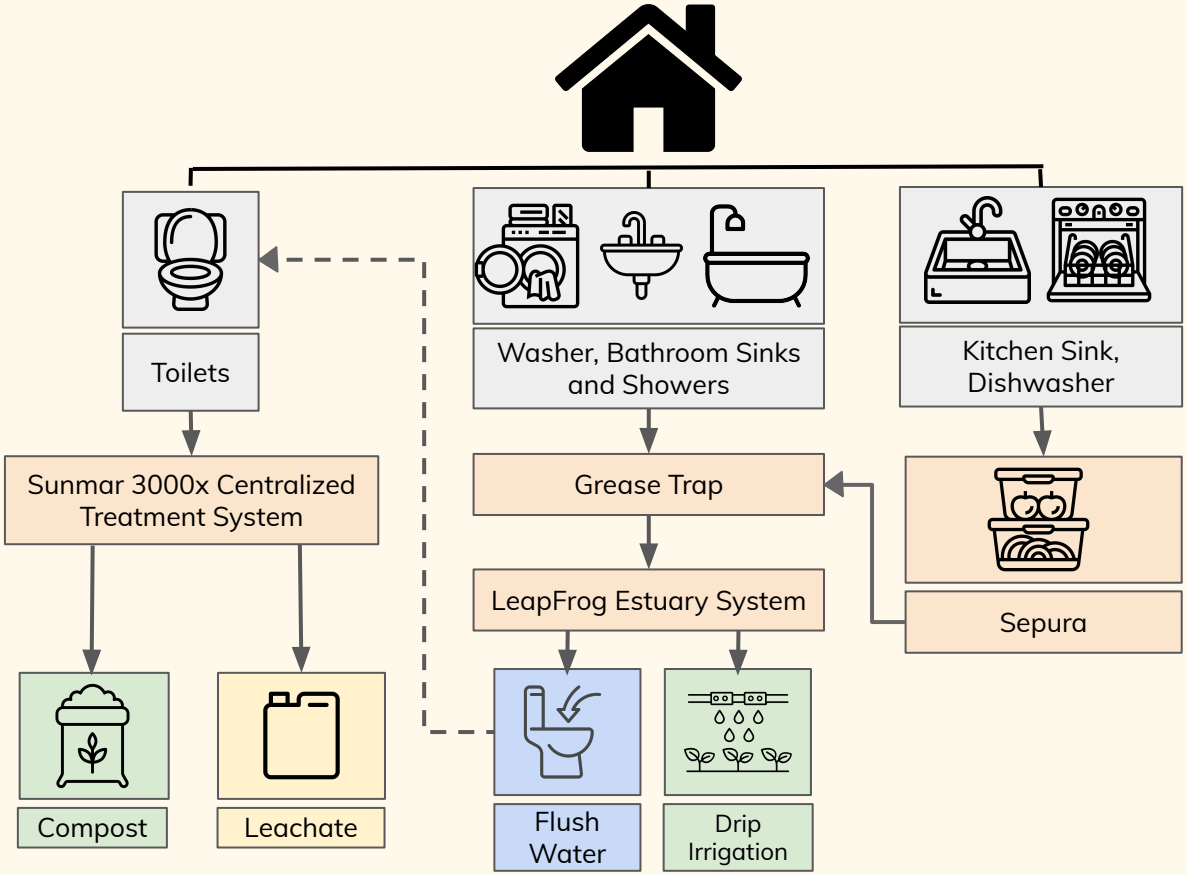
Case by case basis

No graywater reuse regulations

*Map Created by Point of Shift, 2024

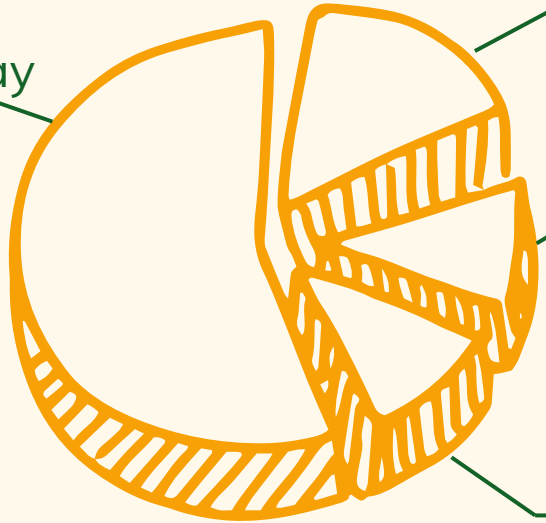
Case Study | Source Separation in Maryland

System + Project Overview	Compost Toilet + Greywater Treatment
Variation from Code	Including kitchen waste in greywater treatment
Pathway	Maryland Innovative + Alternative Pilot
Current Progress	County approval waiting for State Approval (95% on the way to approval)



Ingredients for Robust Market and Ecosystem

- Easeful + Clear Permitting Pathway
  - Certifications not universal
  - Competing certifications
  - Complex pilot processes differ state to state



- Desire by Customers
- Robust Technology Pipeline
- Benefits Compared to Traditional Systems

Onsite systems are highly dependent on the environment they are installed in. In lieu of federal level regulations or unified pathway, Point of Shift suggests moving toward region or similar environment regulations.

Thank you!

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