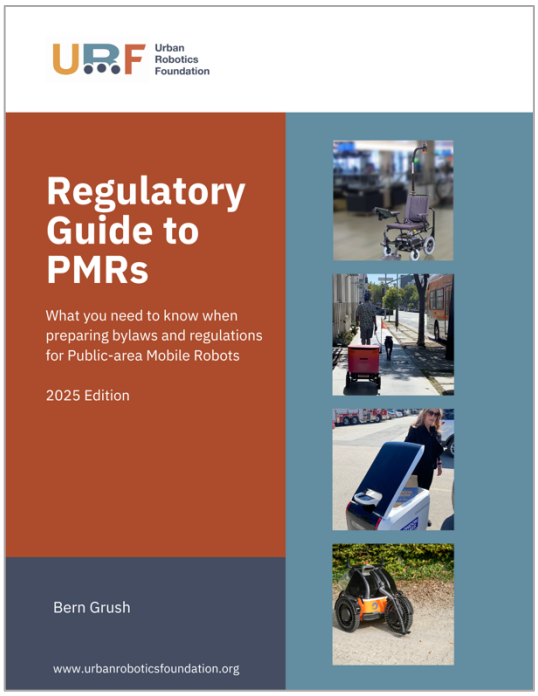
A Preview of URF's Regulatory Guide to PMRs

A ***public-area mobile robot*** (PMR) is defined by the International Organization for Standardization in ISO DTS 4448 as: *"... a wheeled or legged (ambulatory) ground-based robot designed to travel along public, shared, active transportation pathways without the use of visible human assistance or physical guides."*

Scope

PMRs—whether automated or teleoperated—are deployed in public spaces shared with pedestrians, cyclists, micromobility users, cars, and pets.

These devices are deployed on urban sidewalks, bike lanes, roadways, and within buildings for last-mile delivery, maintenance, security patrols, guidance, and many other purposes. They impact all forms of active transport and motor vehicle traffic. Other shared-pathway users—especially pedestrians and cyclists—are generally uninvolved, unprotected, untrained, and inattentive regarding PMR purposes and navigation.



Regardless of their design or task purpose, any PMR that crosses a roadway—including a maintenance or security PMR—becomes a road-traffic participant subject to appropriate traffic rules and social expectations.

The rise of PMRs coincides with the growing popularity of cycling and micromobility. These mobility devices compete for space and utilize common infrastructure (pathways, sidewalks, curbs, intersections). Soon, municipal and regional planners must address issues such as bylaws, certification, licensing, rules-of-the-road, enforcement, orchestration, and monetization.

Because PMRs vary widely in size, speed, and purpose, they can exhibit traffic and social behaviours that are an amalgam of any or all pedestrian, bicycle, micromobility, or automobile behaviours. Because of their growing capabilities in agility and intelligence, PMRs demand ongoing regulatory oversight as part of their integration and deployment on public pathways.

If PMRs are to be licensed to operate at scale—i.e., beyond pilots and trials—preparation for regulatory engagement must begin now.

Regulations

Motor vehicle regulations were first introduced at the beginning of the 20th century. Since 1990 regulations to protect vulnerable users and ensure appropriate infrastructure for people with mobility challenges have complemented these in some countries.

Since 2017, ~25 national and regional governments drafted regulations for limited types of PMRs, predominantly considering size, weight, speed, brakes, lights, insurance, etc. Developed to recognize PMRs for their last-mile logistics potential, they are inadequate in scope and guidance for a safe, managed, urban deployment of the full spectrum of PMR technology.

The URF Regulatory Guide to PMRs begins with existing traffic guidance frameworks extracted from these recent motor code updates and significantly expands these based on the provisions of ISO DTS 4448—*Public-area mobile robo*ts.

Stages and elements

The URF guide is developed in regulatory stages, each spanning multiple deployment facets. This allows governments to develop regulations if and when they decide to scale. Municipalities that decide to permit these devices ONLY for public works activities will have a modest need for extensive regulations and may be concerned with only a minor portion of potential regulations.

Stage 1: Baseline for early operation
- Definitions & Traffic Rules
- Accessibility & Infrastructure
- Security, Privacy & Data
- Certification, Licensing & Enforcement

Stage 2: Expanding operations
- Pathway & Environmental ODDs
- Crash procedures
- Common map maintenance
- Personal Assistant PMRs

Stage 3: Scale and Sustainability
- Orchestration & Monetization

A Roadmap for URF's Regulatory Guide to PMRs

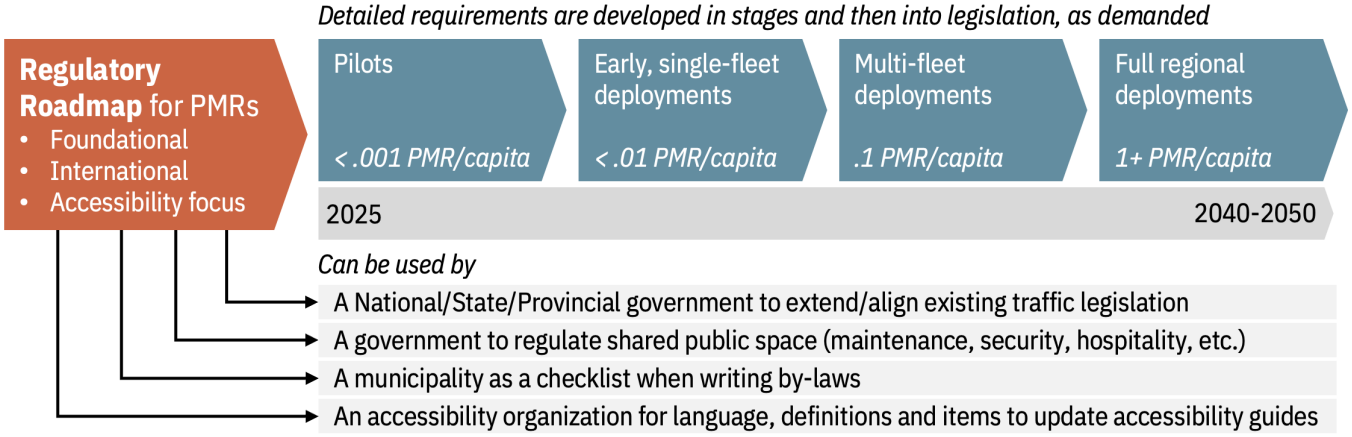
The **Roadmap for the URF Regulatory Guide** will be written with a ConOps (Concept of Operations) level of detail to act as requirements guide for regulators of mobile robots operating in public spaces among uninvolved, unprotected, untrained and inattentive human bystanders.

While this roadmap is not a model regulation in itself, it provides a flexible framework from which model regulations, including operating regulations, can be developed. These models can be tailored to suit various governance levels, from initial pilots to full-scale regional deployments, and for different types of shared human mobility spaces, both outdoors and indoors.

The document is meticulously sourced, drawing from ISO standards, draft standards, and legislative instances from a range of countries and U.S. states. This comprehensive approach ensures its reliability and relevance.

When comparing national, regional or municipal governance, regulatory issues differ in focus and granularity, with municipal governance being the most detailed with respect to local preferences, infrastructure, climates, and purposes.

Any PMR roadmap must look forward 15-25 years as mobile robotics mature. Successful robotic technology is expected to scale considerably, and regulators must anticipate this growth.



The URF Regulatory Advisory Webinar

We offer advisory support to streamline your path to regulating PMRs in an introductory consulting package. These three, one-hour interactive Zoom sessions are scheduled to suit your needs and get your team briefed and ready to move forward with any of municipal, regional, provincial/state, or national level regulations.

US$5,500 + tax; 10% discount to URF members.

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