

Impervious Cover

Definitions:

- % Impervious cover is derived from 2001 LandSat data and includes rooftops, pavement and other non-porous man-made surfaces on the landscape.
- Response: In Rhode Island, is a measure of municipal implementation of Land Use 2025's urban services boundary – directing growth within the boundary and to growth centers outside the boundary.

Significance¹: Impervious cover, also referred to as impervious surface, refers to anything that water cannot penetrate. Ranging from residential rooftops, patios and driveways to town roads, public buildings, commercial structures and parking lots, impervious cover prevents rain and snow from soaking into the ground, turning it into stormwater runoff. Stormwater runoff carries organic matter, fertilizers, pesticides, oil and grease and other contaminants into our ponds and streams. In addition to changing the *quality* of the water running into our waterbodies, impervious cover changes the *quantity* of runoff, eroding and changing the physical structure of existing streams. Because water runs more quickly off of an impervious area, flooding becomes both more common and more intense downstream. Meanwhile, because less water is soaking into the ground, water tables can drop and streams and wells fed by groundwater begin to dry up.

While it is difficult to predict which factor will come into play in any particular situation, as impervious cover rises above 10% there is almost always a measurable loss in water quality. Between 10% and 25% these impacts increase, and pollution and flooding are both evident. Above 25% impervious cover, water quality impacts can be so severe that it may not be possible to restore water quality to pre-existing conditions.

Towns interested in protecting water quality, natural ecosystems, and the prevention of flooding, can use impervious cover as a surrogate for both measuring and managing water quality and watershed health. By keeping overall impervious cover below 10%, towns can ensure that the land will be able to absorb and filter runoff from developed areas and prevent excessive flooding, ecosystem impairment and contamination of water supplies.

¹ From "The Need to Reduce Impervious Cover to Prevent Flooding and Protect Water Quality" May 2010

² From "Currents of Change", 2009, http://nbep.org/currents_change/impervious_surface.html

CITY/TOWN	IMPERVIOUS COVER	RESPONSE
	2004	2010
Barrington	14%	
Bristol	20%	
Burrillville	5%	
Central Falls	38%	
Charlestown	6%	
Coventry	8%	
Cranston	19%	
Cumberland	13%	
East Greenwich	11%	
East Providence	20%	
Exeter	3%	
Foster	3%	
Glocester	4%	
Hopkinton	5%	
Jamestown	9%	
Johnston	15%	
Lincoln	16%	
Little Compton	6%	
Middletown	18%	
Narragansett	12%	
New Shoreham	5%	
Newport	30%	
North Kingstown	14%	
North Providence	31%	
North Smithfield	9%	
Pawtucket	26%	
Portsmouth	13%	
Providence	37%	
Richmond	6%	
Scituate	4%	
Smithfield	9%	
South Kingstown	7%	
Tiverton	8%	
Warren	16%	
Warwick	24%	
West Greenwich	5%	
West Warwick	26%	
Westerly	16%	
Woonsocket	40%	
Inland	7%	
Coastal	14%	
Rhode Island	12%	

Source: Zhou, Y. and Y.Q. Wang. 2007. An Assessment of Impervious Surface Areas in Rhode Island. *Northeastern Naturalist* 14(4):643-650.