**Why isn't the U.S. on the metric system?**

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This standard wooden ruler in which inches mingle freely with centimeters says a lot about the state of the U.S. measuring system.

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Many myths swirl around the metric system and U.S. involvement with it. Let's dispel a few. First, the relationship between the [metric system](http://science.howstuffworks.com/5-things-about-metric-system.htm) and the United States dates back to the 18th century, not the 1970s. Second, all countries have either fully adopted or legally sanctioned the **International System of Units**, or **SI**, the modern form of the metric system. That includes the U.S., Liberia and Myanmar, three countries often listed as the sad-sack metric losers. Finally, a country doesn't simply "turn on" on a brand-new system of weights and measures. Even France, the brainchild behind decimal-based measuring, adopted its own metric system in fits and starts. And all countries use legacy units alongside metric ones, at least in colloquial expressions.

Despite America's long history with SI units, measuring remains a mess in the States. A [football field](http://entertainment.howstuffworks.com/football.htm) traffics in yards while most footraces prefer meters. Mechanics measure the power of an [automobile engine](http://auto.howstuffworks.com/engine.htm) in [horsepower](http://auto.howstuffworks.com/horsepower.htm) (foot-pounds per second), but express the same engine's displacement in liters. Air pressure is denoted in all sorts of ways: pounds per square inch (or psi) for tire pressure, inches of mercury for surface atmospheric pressure and millibars for air pressure aloft.

And these are just a few examples. In the **U.S. Customary System**, or the inch-pound system, more than 300 different units exist to measure various physical quantities. Many of those units use the same name but have very different meanings. On the U.S. Metric Association Web site, contributor Dennis Brownridge identifies at least nine different meanings for the unit we know as a "ton": short ton, displacement ton, refrigeration ton, nuclear ton, freight ton, register ton, metric ton, assay ton and ton of coal equivalent.

To understand why the U.S. doesn't use the metric system in its commercial activities and everyday life, it helps to look at a brief history of how the European system of measurement came to U.S. soil.

Every election cycle candidates promise to go the extra mile, but this season only one is promising to go the extra kilometer.

In his announcement speech for a 2016 presidential bid, former Rhode Island Gov. Lincoln Chafee threw his support behind a cause that has Americans, both Democrat and Republican up in arms: Converting to the metric system.

"Here's a bold embrace of internationalism: let's join the rest of the world and go metric," Chafee said. The only problem with that stance though, is that many voters hold our system of measurements to be a long-standing pillar of American individualism. [(Tweet This)](http://twitter.com/share?url=http://www.cnbc.com/id/102733613&text=If%20you%20give%20presidential%20candidate%20Lincoln%20Chafee%20an%20inch%20he'll%20take%20your%20mile&via=CNBC)

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But few know the U.S. has already *technically* adopted the metric system.

"The metric system has been legal in this country since 1866," Don Hillger, president of the U.S. Metric Association, a non-profit that battles for nation-wide metric conversion, told CNBC. "I wish we saw it out of a more popular candidate... but we're not going to win the battle on popularity, its a logic thing."

So why don't we use the metric system?

Indeed, the U.S. is the only industrialized nation that has yet to widely convert to the metric system. In fact our refusal to convert our own measurements dates back to the very creation of the country.

Though colonists were accustomed to the Imperial system of measurements used by the British, early founders introduced their own tweaks under the Constitution's Article I, Section 8 that states Congress holds the power "to coin money...and fix the Standard of Weights and Measures." Despite calls to convert in 1821, Secretary of State John Quincy Adams saw no need, and affirmed America's metric system snub.

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But in 1866, President Andrew Johnson committed an act of treason in the eyes of the measurement community by signing into law an act of Congress that made it "lawful throughout the United States of America to employ the weights and measures of the metric system in all contracts, dealings or court proceedings." But even that couldn't kill the U.S. customary system. Neither could the push to convert in 1975 when Congress passed a similar Metric Conversion Act. Nor would our stubborn measuring ways die with the Trade and Competitiveness Act of 1988.

The reason why is that all of the measures passed by the government have been voluntary. Even states and counties have the right to use either measurement system as they please. A stretch of Interstate 19 known as the "Metric Highway" in Arizona has featured metric units on road signs since the '80s. The laws are similarly voluntary on the part of American producers. The only mandate comes from the Food and Drug Administration which requires dual labeling, according to Don Onwiler, executive director of the National Conference on Weights and Measures—a group that has helped keep consistent measuring standards across states since 1905.

"I don't even know how you would estimate the cost to convert, but it would be a costly process. Our position is we want to remove the barriers so where it's practical it can happen naturally," he said. How practical and necessary a conversion would be can vary from industry to industry.

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NASA claims its costs to convert its measurement systems would be over $370 million. But not converting has costs of its own. NASA lost $125 million when its Mars Climate Orbiter was destroyed after its altitude-control system mixed up U.S. customary units with metric units.Other industries and the public could face different conversion costs.

Hillger insists the costs are worth it in the long run. "We realize there is a cost with going metric, like changing street signs," he said. "But those costs are in short term, the benefits last far longer."

For Lincoln Chafee, those benefits could last four years in the White House if Americans agree with his call to convert. If, that is, he can convince them to give an inch.