I'm grateful to Joe and Scott for giving me this opportunity to update you on what SmartWay has to offer rail carriers and shippers.

I'm a big fan of NEARS as a way to learn about the business of rail and intermodal transportation, and I urge my counterparts in HQ and other regions to try NARS chapter events too.

My philosophy: don't make industry come to you– go to them.

Topic today: SmartWay Transport Partnership.

I'm the regional liaison for New England.

The national experts reside in DC and AA.

I won't be able to get in very deep, but I can refer you to experts and research your questions.

What drives the Freight Sector toward SmartWay? A mix of things:

- The win-win potential of helping the environment by saving fuel.
- Wanting to look like, and actually be, a good corporate citizen.

SmartWay makes the business case for freight sustainability by helping its partners:

- Benchmark, account for, and improve their carbon footprints.
- Find business partners who can help them improve.
- Learn about fuel-saving technologies, strategies, and case studies.

Rail carriers, and shippers who use rail, can benefit.

First: Where's the Beef?

- 10 years
- 3000 partners
  - Top 100 U.S. truck carriers
  - All Class 1 RRs
  - Fortune 500 shippers
  - Major logistics firms
  - 650,000 trucks
  - 50 billion annual truck miles
  - 51 million metric tons of CO_2
  - 120 million barrels of oil and 5 billion gallons of fuel
  - $16.8 billion dollars in fuel costs

SmartWay

3

SmartWay isn't theoretical– it's been going strong for 10 years and racking up savings.

Because it reduces emissions, enjoys industry support, and requires relatively few EPA resources, EPA managers love SmartWay.

Charter & leading partners stay involved in growing & promoting SmartWay.

Growth has followed a pretty steep curve. This 10th anniversary year, staff are getting out to all the major industry events for a big shipper recruiting push.

Among current partners are:

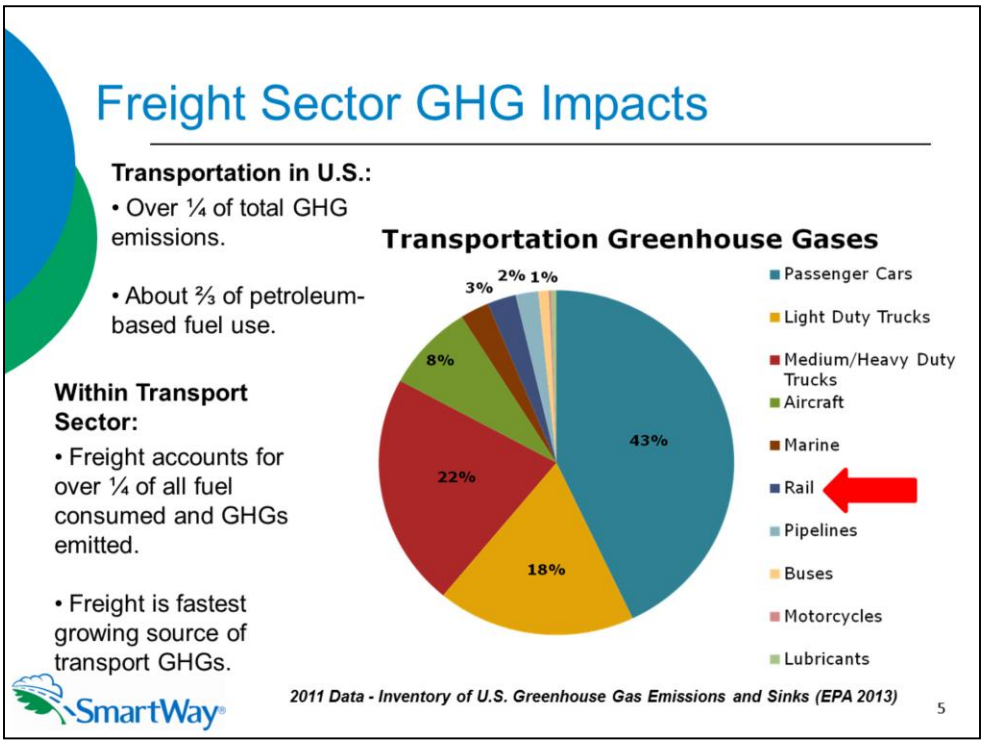
•250 Shippers.

•500 Logistics providers.

•15 major Multimodal carriers, like HUB, YRC, Schneider, JB Hunt, CR England.

•All Class I and several Class II & III Rail carriers.

OK, how come EPA cares so much about SmartWay?



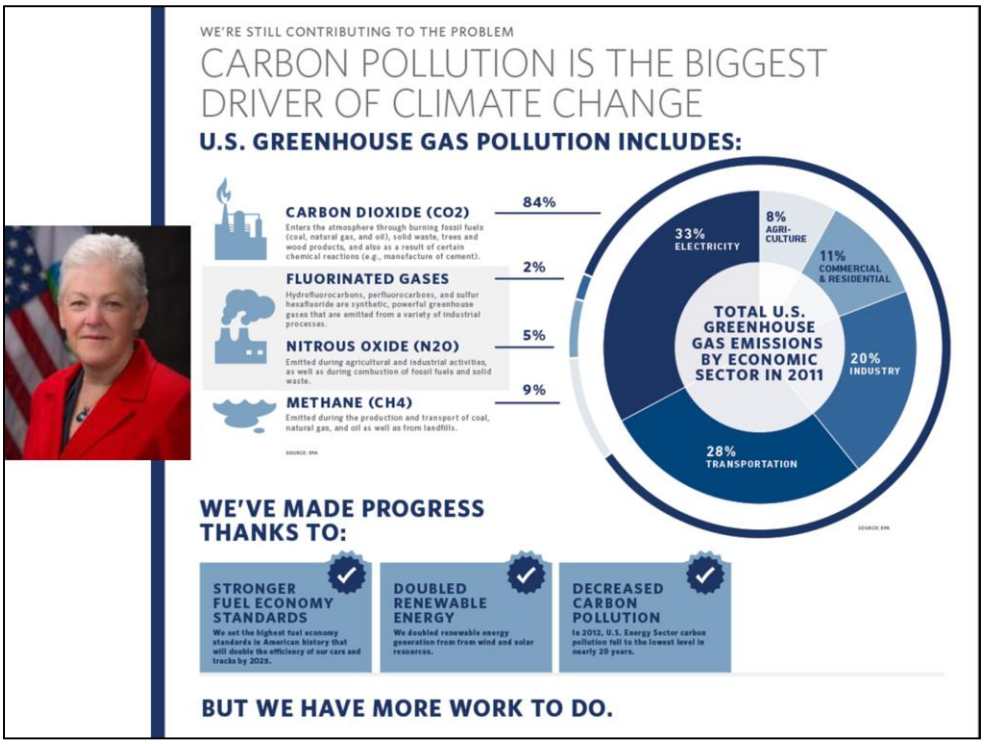
I'm sorry to have to talk about this, because it's a bummer… but EPA is really worried about Climate Change, which will alter life as we know it. Greenhouse gases (mainly CO2) are the big culprit.

Freight accounts for about 1/16th of all U.S. GHG emissions. Not huge, but not negligible.

Since 1990, the rate of growth of GHG emissions from freight sources has been twice as fast as that for passenger travel (31.4 percent vs. 15.7 percent).

Trucking accounted for the lion's share of freight emissions, followed by freight rail-- a distant second.

(Source of freight emissions growth data: USDOT FHWA Freight Facts and Figures 2011, p. 63.)



This graphic is from the President's Climate Change Action Plan. (And this is our fearless & practical leader Gina McCarthy.)

The World Meteorological Organization says that each of the last three decades has been warmer than the previous one, culminating with 2001-2010 as the warmest decade on record so far.

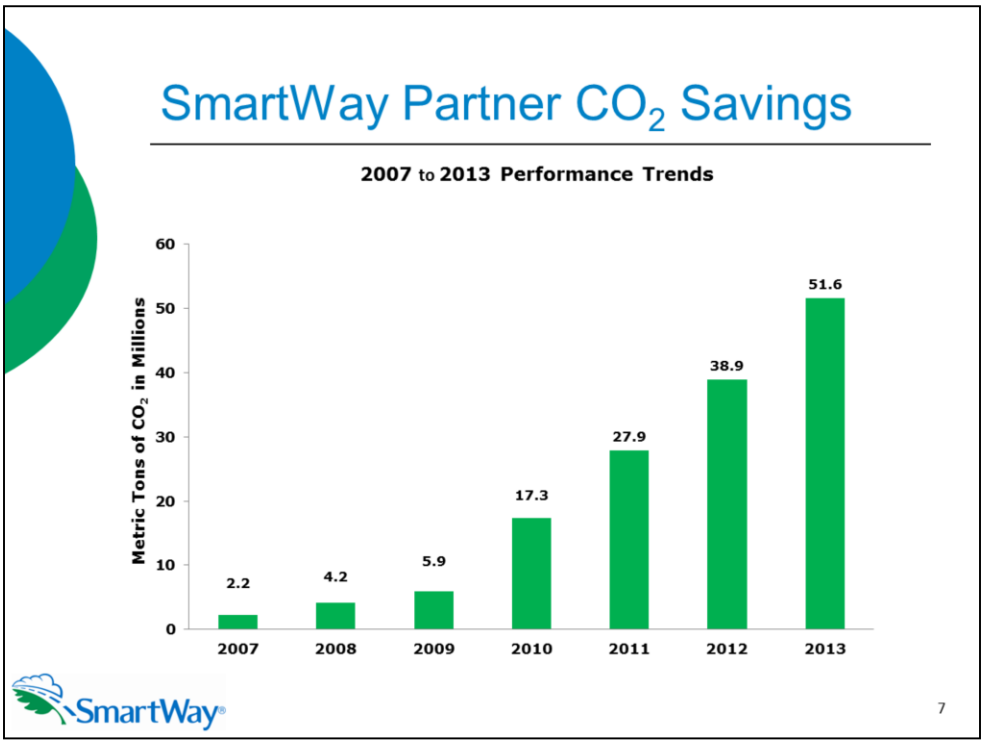
What does global climate change have to do with New England? Well, for example:

• From 1970 to 2012, New England's average annual temperature has increased by 2 degrees, and 4 degrees in the winter. By 2100, NH summers will feel more like North Carolina's. The sunset of our ski industry is in sight.

• We have seen a 74% increase in extreme weather events between 1958 and 2011, and we're in for more.

• Sea levels are expected to rise on the New England coast by 36-79 inches by 2100.

Obviously, we can't prevent climate change from where we sit in New England, but we can do our fair share to slow it down.



This is what SmartWay is doing about it: helping freight save CO2 emissions.

SmartWay is like your IRA: it grows when you contribute, and then the investment earns dividends.

SmartWay partners join, and they do better year-over-year through mode choice, carrier choice, and optimizing their own operations.

SmartWay is EPA's main voluntary program for reducing GHG emissions from freight.

EPA and DOT are also reducing CO2 from trucks & buses by increasing fuel economy standards for new vehicles.

Some of the SmartWay technologies that have shown brisk ROI (1 to 2 year payback or less), like auxiliary power units for sleeper cab tractors and fairings for trailers, get "credit" under these standards when included in new equipment. They kicked in with the 2014 model year, and now EPA has proposed phase 2 standards to deepen savings and extend them longer-term.

SmartWay also serves as the centerpiece of EPA's voluntary efforts to cut "criteria" air pollutants like NOx and PM, which cause localized air quality problems and illness.

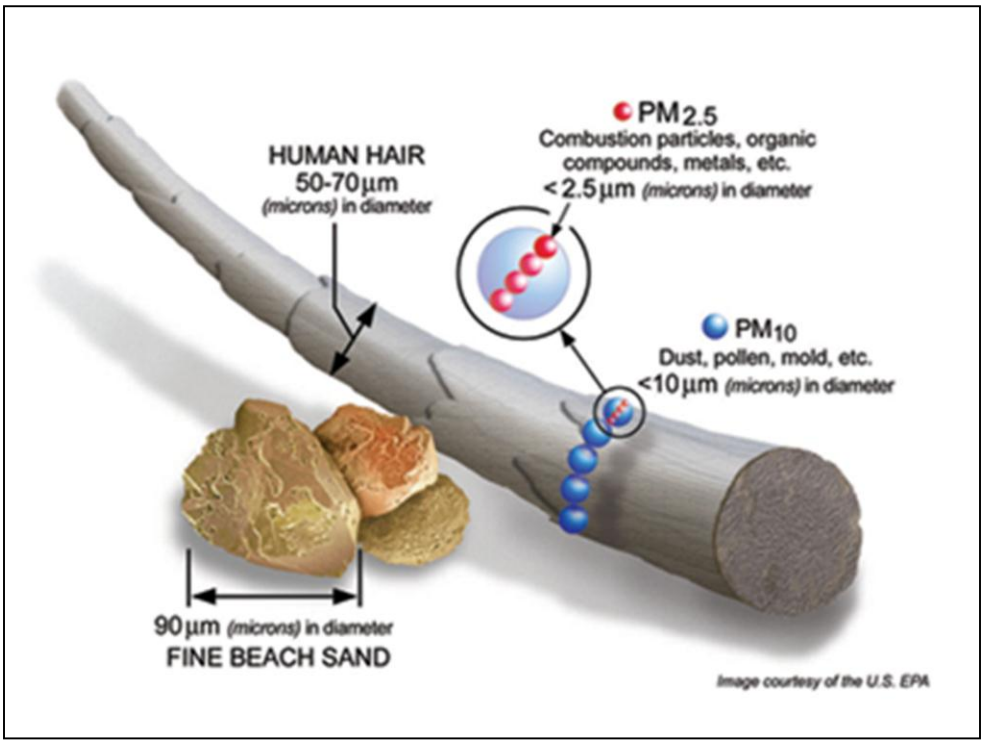
EPA competes "clean diesel" grants each year to help fleets pay for expensive projects. Some of the RRs in this room have been beneficiaries.

This graphic shows EPA's regulatory program for reducing criteria air pollutants by improving engines and fuels. Sectors also addressed by SmartWay are highlighted in red.

Now, only oceangoing vessels can burn anything richer than ULSD. (Within the North American ECA, vessels have to burn lower-sulfur fuel. 2015: will go down to 1000 ppm, vs 15 ppm ULSD.)

Locomotives aren't a huge source of PM & NOx, but they have long useful lives and acutely affect "hotspots."

I gave a presentation on EPA's locomotive engine & fuel rules at the March 2014 New England RR Club Expo– approach me later if you'd like a copy.



Showing magnified slides of icky things is a way to get a kick if you're a public health person… dust mites… bed bugs… e. coli bacteria… yuck.

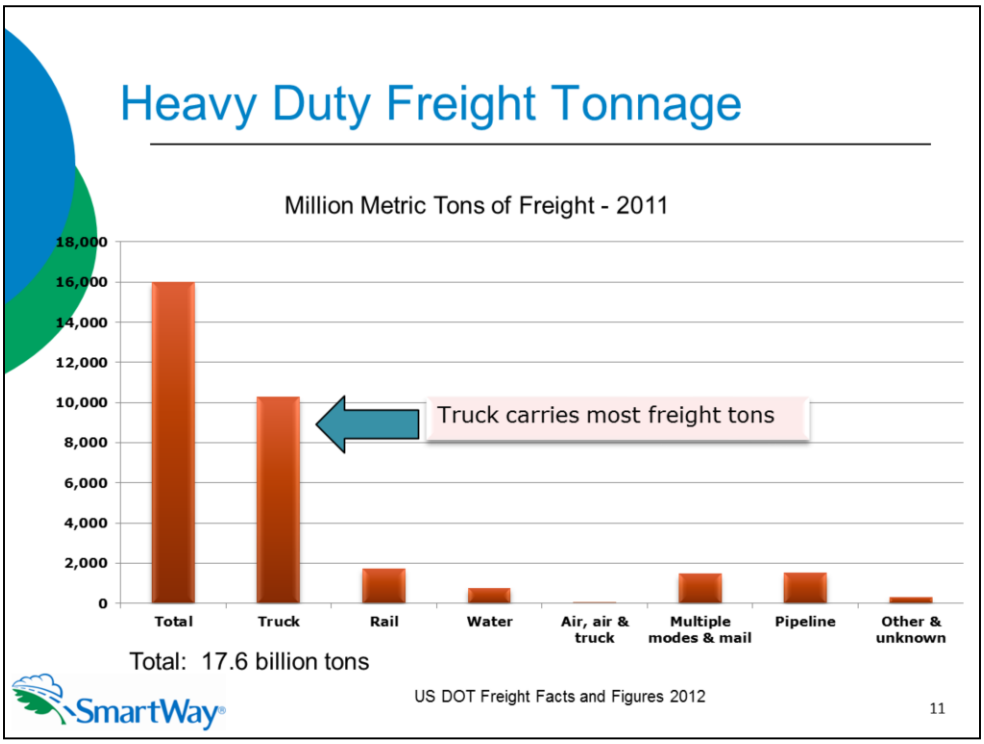
This shows the two sizes of particulate matter that are regulated by EPA, compared to a human hair. The tiniest can't be filtered by your respiratory system and penetrate deep into your lungs.

The less fuel you burn, and the cleaner the engine you burn it in, the less of this you'll send wafting toward the nearest human.

OK, on to the next force that drives SmartWay, the one that makes it really work: MONEY.

You know, but may be surprised that EPA knows, that freight transportation is a cornerstone of the U.S. economy.

While the freight system moves $16.8 trillion worth of freight yearly, transportation logistics costs $836 billion (about 5% of value). How can we reduce those costs and reduce emissions at the same time?



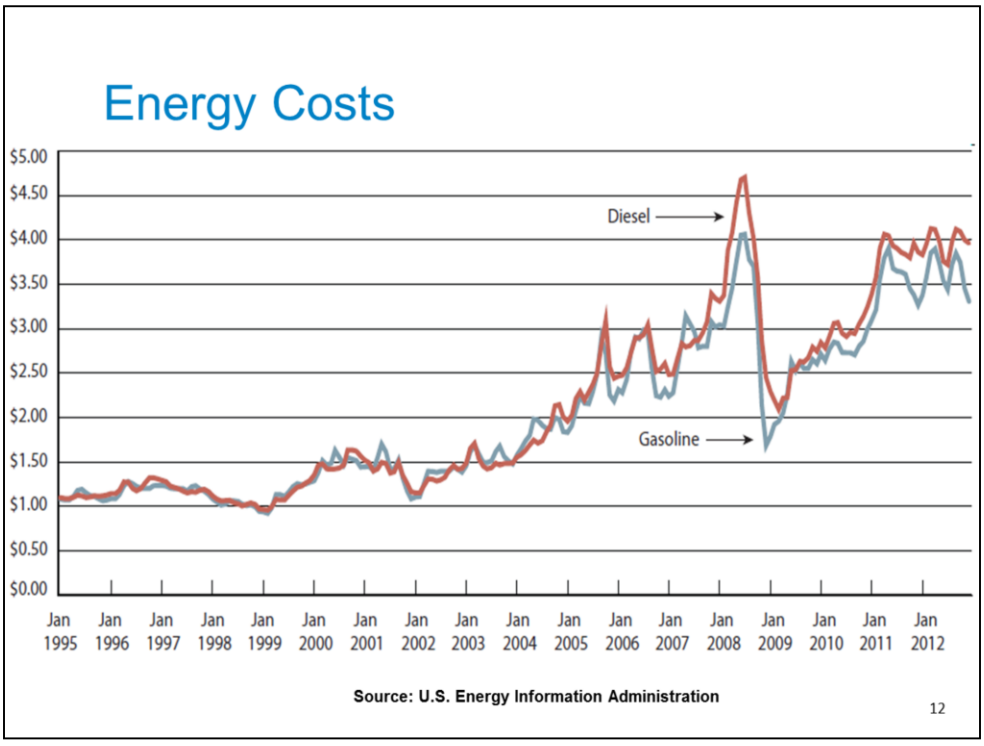
SmartWay began by focusing intensively on trucking, because that's where the tonnage, miles and emissions are.

SmartWay has verified many types of "upgrade" technology for trucks, like idle reduction equipment, aerodynamics, and reduced rolling resistance tires, and average fuel savings.

SmartWay also "designates" SmartWay truck and trailer models so fleet owners can buy all that fuel efficiency in one bundle.

SmartWay promotes distinction among truck carriers so shippers can choose the most fuel-efficient provider.

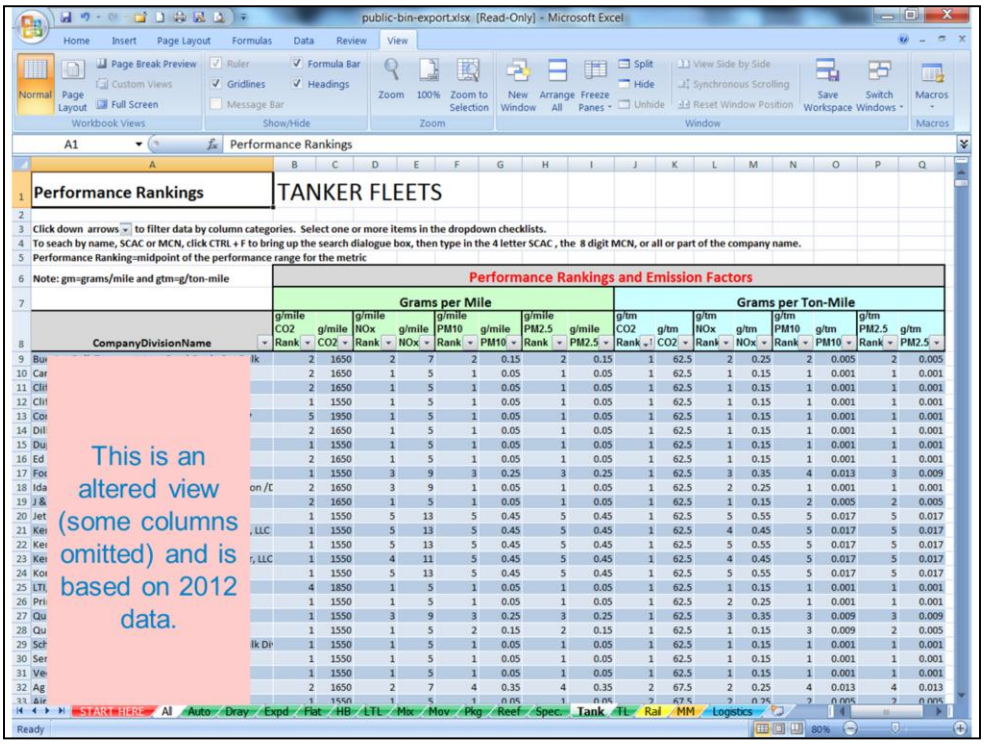
But rail (and barge) should be carrying more of that tonnage… so SmartWay urges shippers and logistics providers to think multi-modal.



Controlling fuel costs can reduce budget uncertainty for shippers as well as carriers. Fuel is second only to personnel costs in a freight carrier's budget, and a lot easier to cut.

SmartWay teaches carriers how to do that, and allows shippers to choose the carriers that do it best.

Here's a sneak preview of how it works, to whet your appetite.



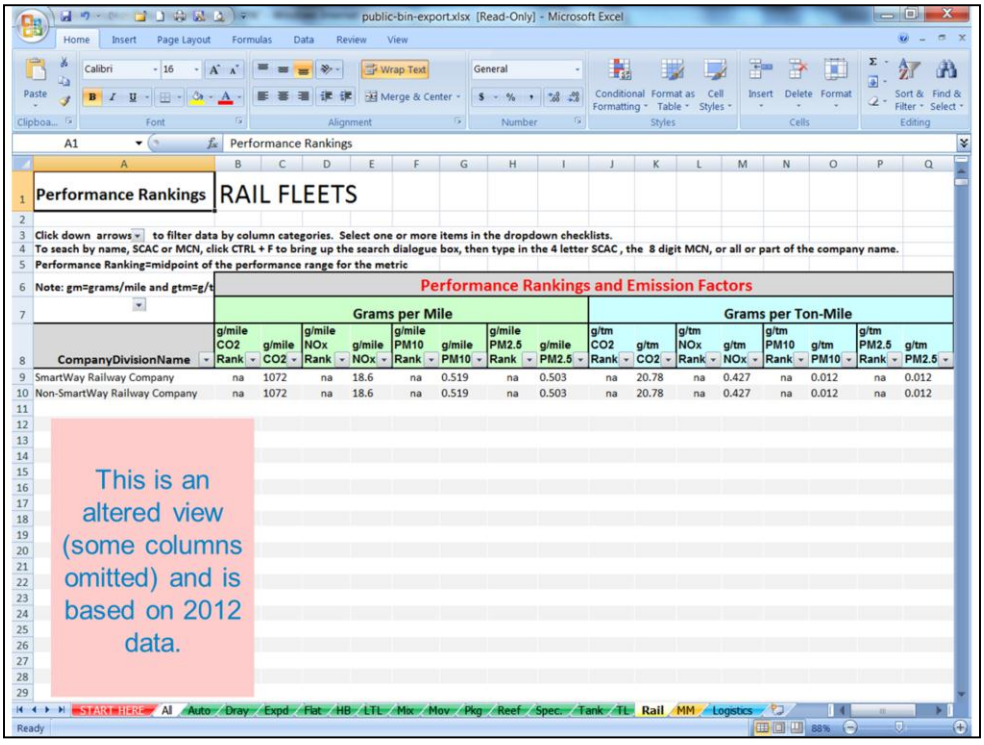
Say a shipper is looking for the most efficient truck carrier, in terms of CO2 emissions (which equates with fuel efficiency) to carry his tanker commodity.

He can “go shopping” by downloading the publicly-visible carrier performance rankings from the SmartWay website. We see here the SmartWay partner tanker fleets ranked by their scores in column J, with a rank of 1 being the most efficient band, and 5 being the least.

Or, the shipper can open his tracking tool and upload the performance data from SmartWay partners with for-hire tanker fleets, and experiment with adding, subtracting & mixing providers.

Or, he can look for the most efficient Logistics partner to make that choice for him.

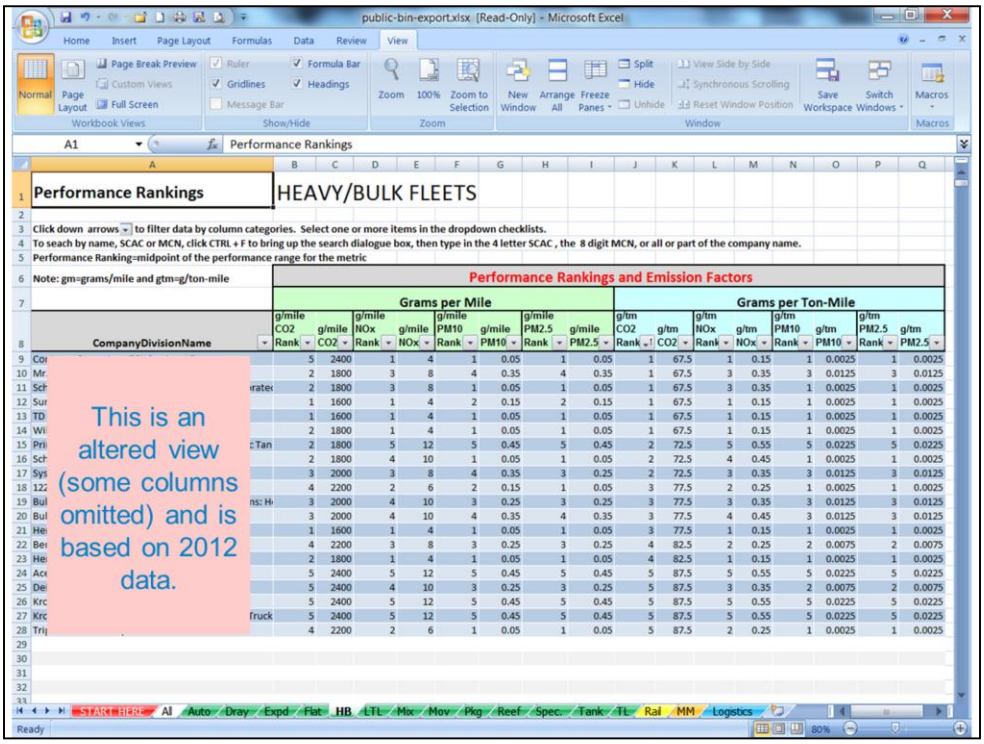
We see here that the most efficient band in the five-tier ranking system for CO2 has a mid-point value of 62.5 grams per ton-mile.



Moving to the Rail tab, it looks like the shipper could do a lot better with rail, at an average of 21 grams of CO2 per ton-mile, about 2/3 less.

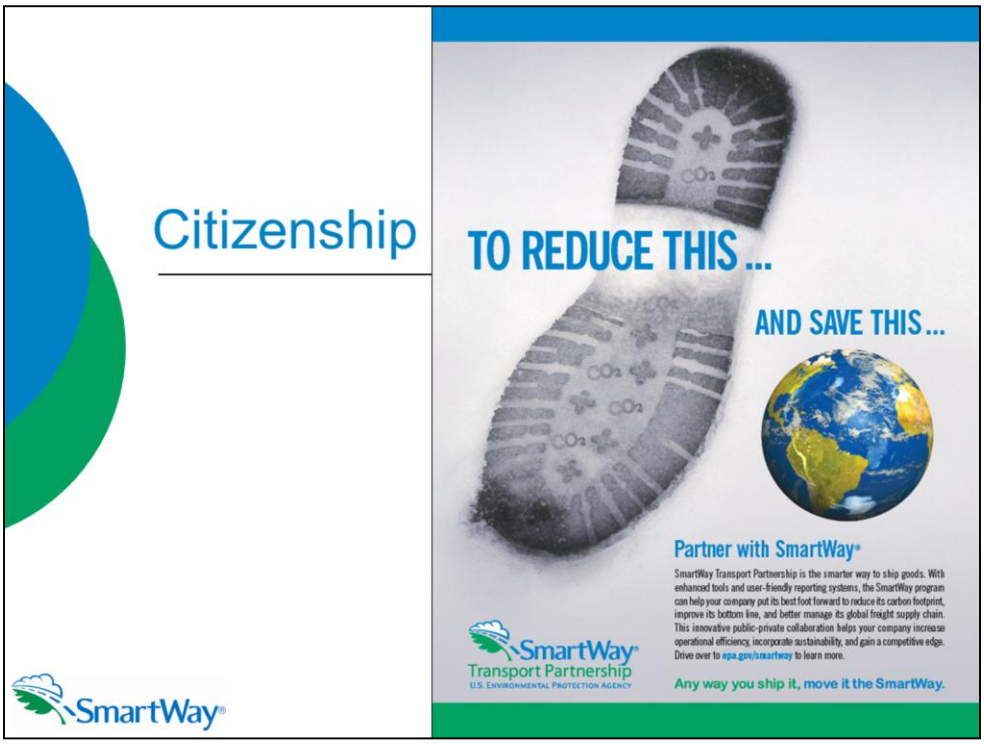
You'll notice that there are only 2 rows for rail carriers– SmartWay and non-SmartWay– and the scores are the same. Currently, all railroads are equal in SmartWay. The data is based on industry averages.

Some day, we hope, RRs will be able to distinguish themselves on the basis of their equipment, infrastructure and practices, so those that provide the clearest advantage can shine, and shippers and logistics providers can get full credit for their environmental benefit.



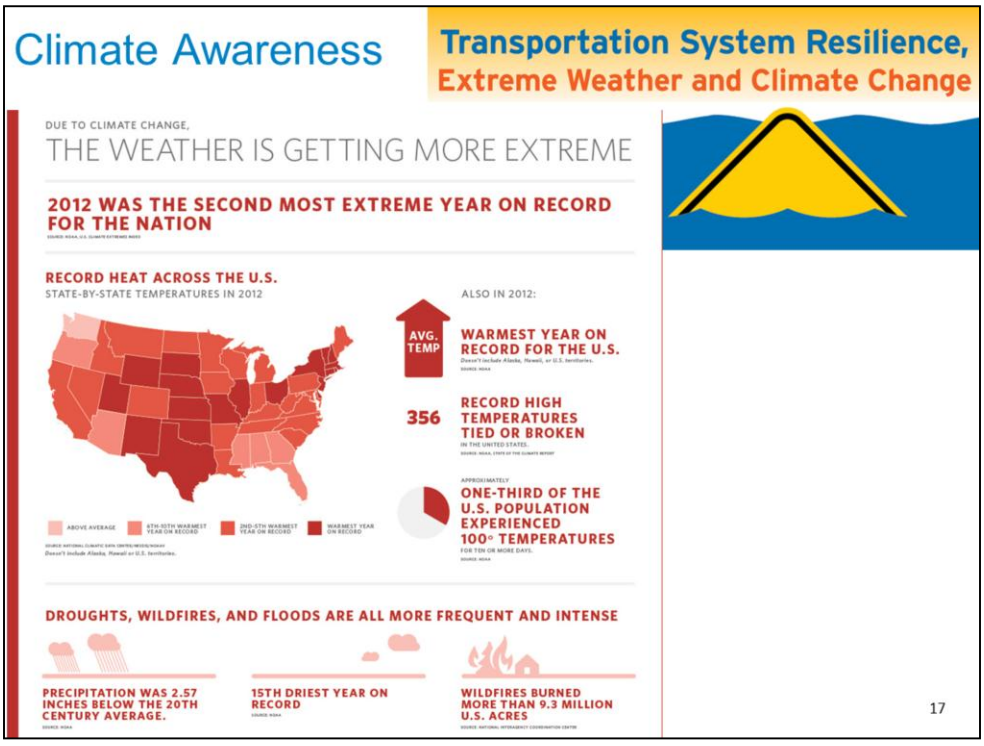
Now comparing truck fleets that carry heavy and bulk goods, we see that the grams of CO2 per ton-mile efficiency of the generic rail carrier (previous slide) would be over 3 times better than the most efficient heavy/bulk truck carrier partner performance band (at 67.5 grams per ton-mile).

However, the opposite is true if you compare NOx and PM. This is because truck engines are still a lot cleaner than locomotive engines.



And that brings us to another driver of SmartWay, Citizenship: a company's self-image, the image they project to the world, and what the world asks of them.

(This Carbon Footprint ad reached a total of 1.75 million people via Forbes and Bloomberg BusinessWeek.)

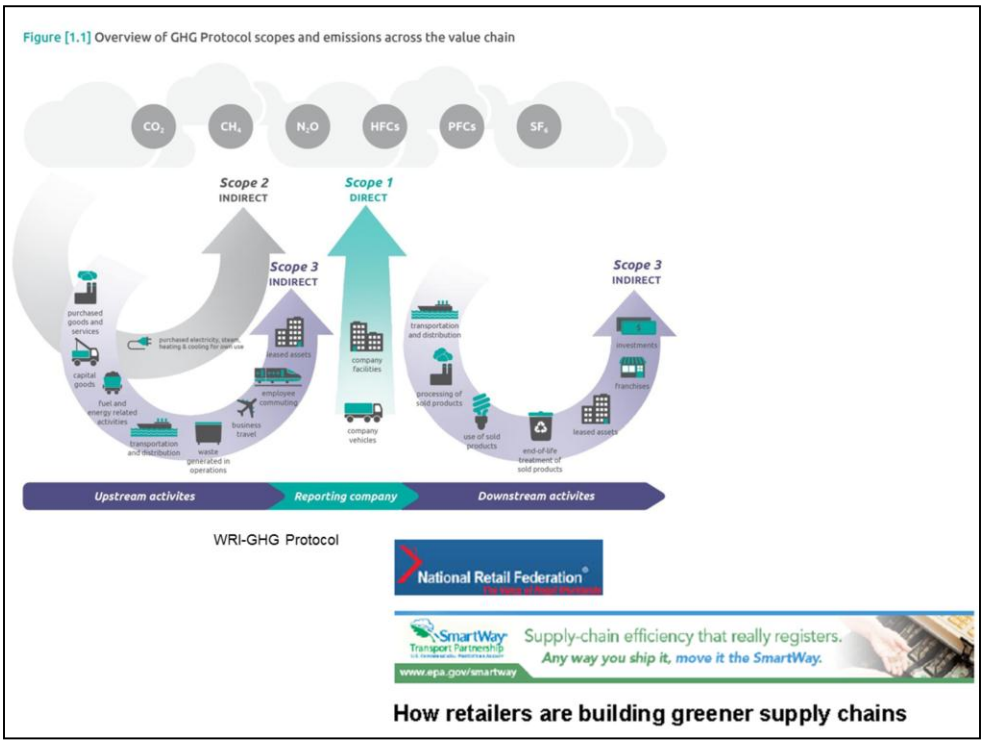


EPA & other agencies & orgs are speaking up urgently about what's ahead.

DOT is pushing state agencies to build for climate adaptation. On a March 2014 DOT webinar an MIT expert on climate & extreme weather told the audience:

- Our climate is warming due to an increase in greenhouse gas concentrations
- Much of the tangible risk of climate change is more extreme weather events
- Heat waves will become more frequent, and cold waves less so
- Incidence of floods and drought will increase fairly rapidly
- Frequency of destructive hurricanes is projected to increase
- Hurricane-related flooding will be exacerbated by rising sea level and enhanced rainfall

This is all beginning to sink in. So now insurers, banks, and investors are looking at climate risk as a component of business ventures. The increasing globalization of supply chains means that extreme weather and other effects of climate change in remote parts of the world have a ripple effect.



Government and industry-based programs formed to address climate change are asking shippers and carriers to set goals and do carbon accounting. The same tools partners use in SmartWay can be used to report to and otherwise participate in efforts like:

-- the Carbon Disclosure Project, driven by over 650 investors representing $78 trillion in US assets, and contributed to by over 3700 companies in 72 countries, including 81% of Global 500 companies and 68% of S&P 500 companies.

-- The London Stock exchange, which is requiring that all UK companies listed on the Main Market measure and report GHG emissions from worldwide operations.

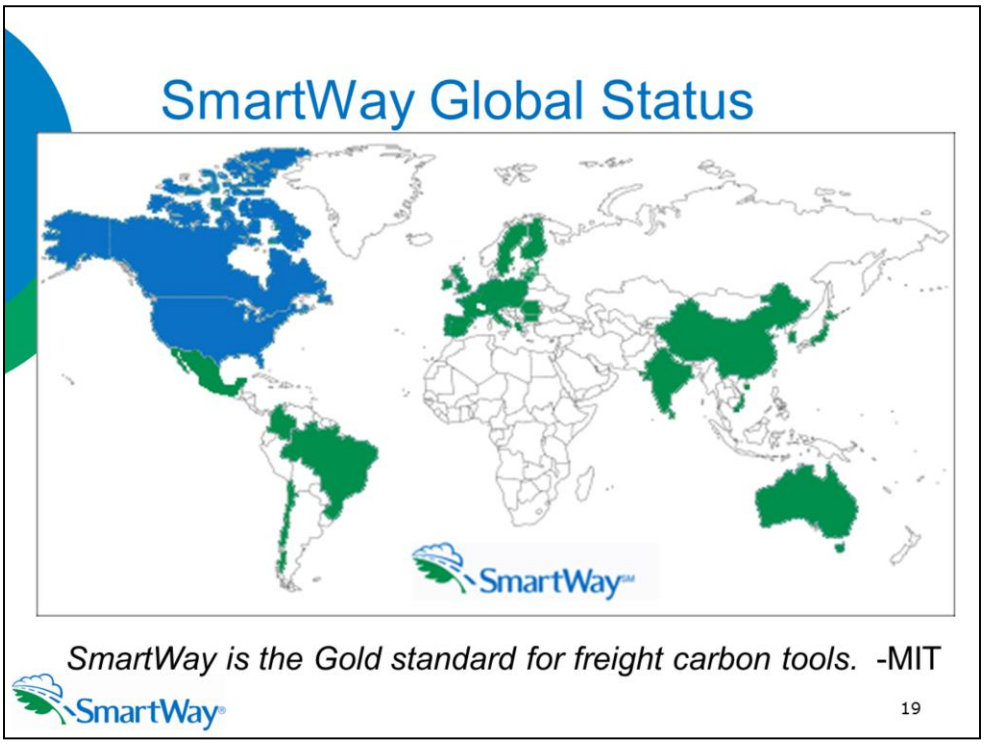
-- the Global Reporting Initiative's framework for sustainability reporting.

-- the Green House Gas Protocol's corporate standard reporting. (SmartWay is used for Scope 3, seen above)

-- the World Bank's International Council for Clean Transportation.

-- the UN Environment Programme's Climate and Clean Air Coalition, so far involving 38 countries plus the EU commission and 44 organizations, which is spawning SmartWay cooperating programs across the world and is working toward developing a common international platform.

EPA is coordinating with all these organizations to insure that investments partners make in SmartWay translate to other programs that they or their business partners may want or need to respond to.

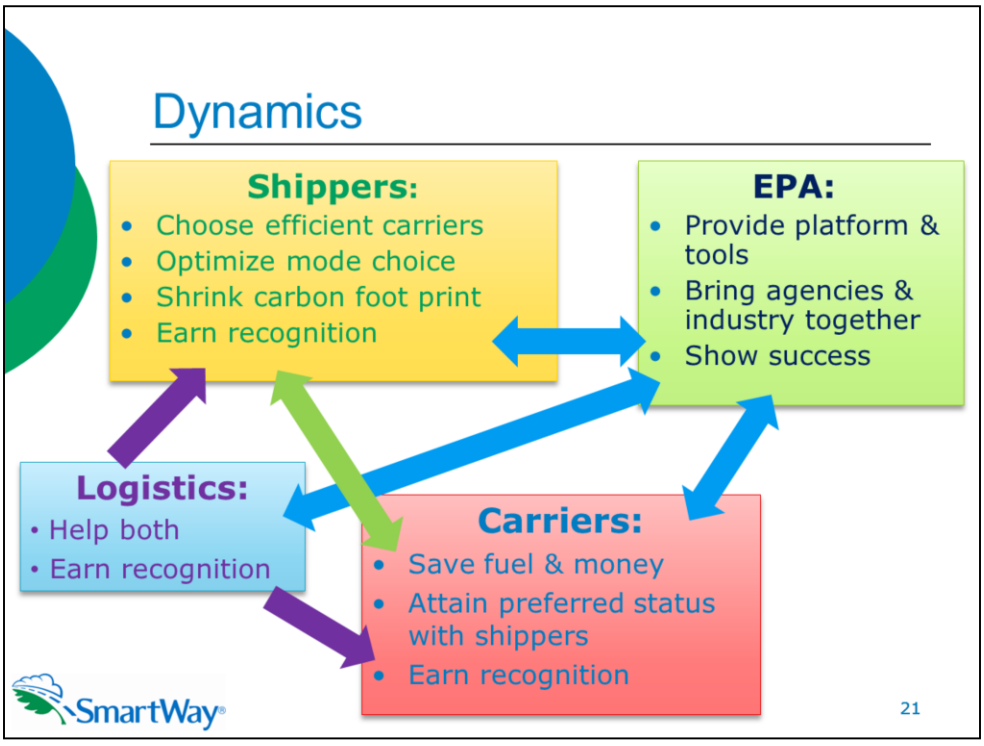


In sum… who can you believe if not MIT?

“SmartWay is the Gold standard for freight carbon tools.”

So… what is this thing called SmartWay that is the answer to all our problems?

SmartWay is about people, and their companies. Here is a small smattering of logos from some of our 3000 partners.



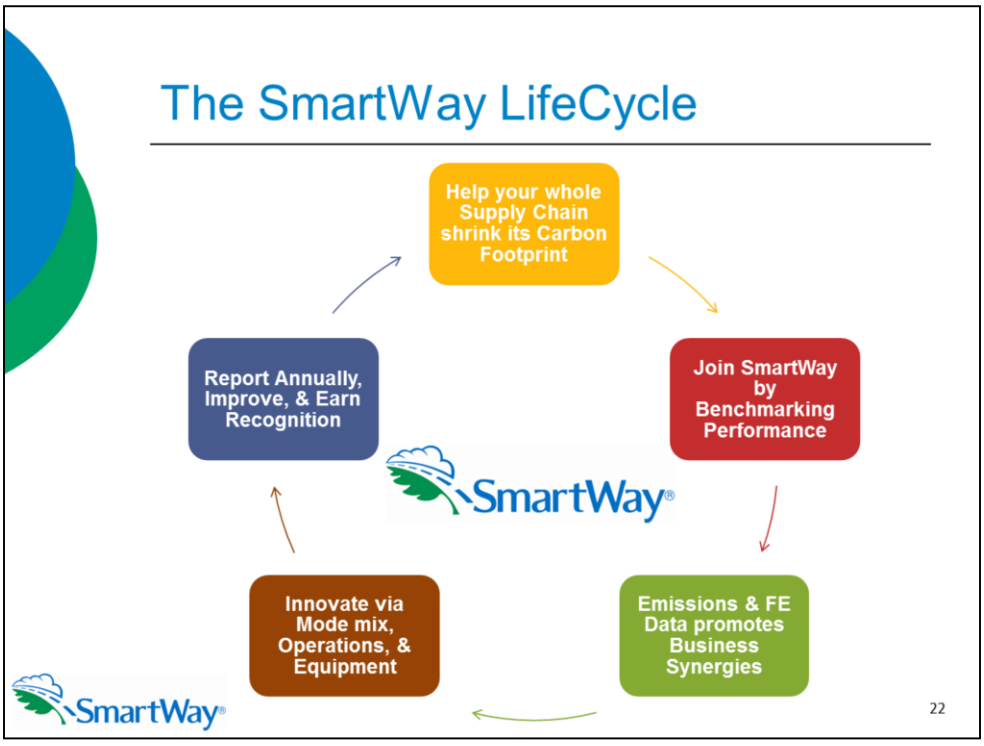
Because SmartWay was designed by industry and EPA, the dynamics are market-based and have worked the same way since its inception.

Shippers are at the top of the SmartWay food chain. They respond to shareholder, customer, and business partner demands for carbon accountability. To do so, they need to find fuel-efficient carriers, and figure out ways to make their whole transportation supply chain more efficient.

Carriers are the meat and potatoes of SmartWay. They want to save money and earn shippers' business…or merely stay in business.

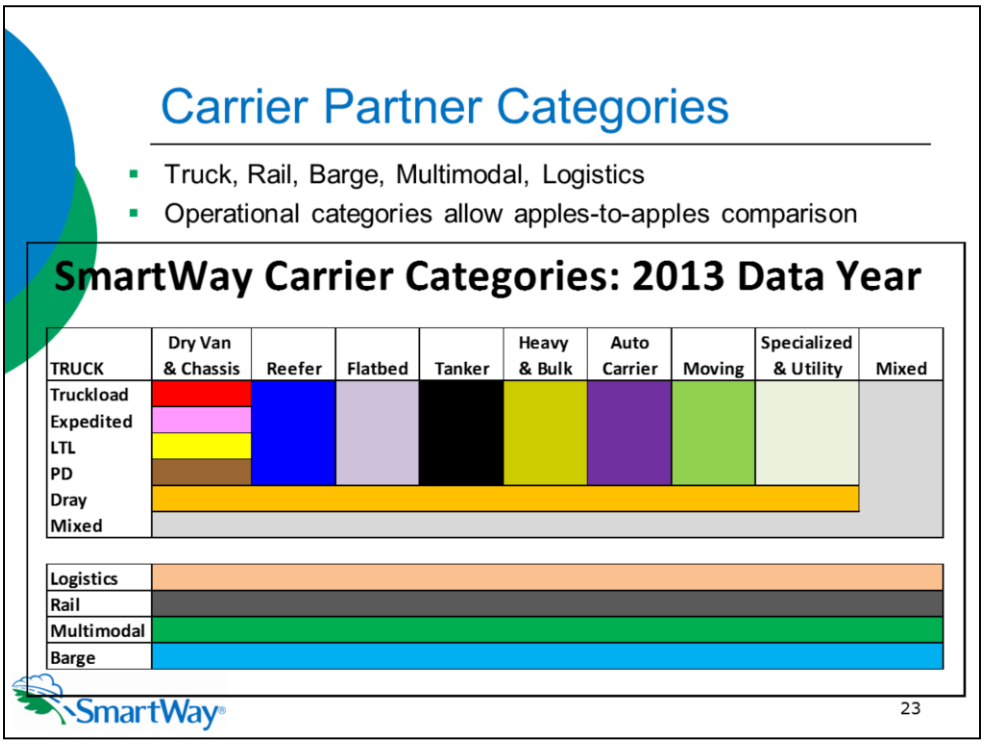
Logistics partners (3PLs, 4PLs, freight forwarders, freight brokers, etc) help shipper clients reduce emissions by designing the right mix of fuel-efficient, cost effective carriers. They develop and match their carrier base to shippers' needs, and can spur greater efficiency among carriers with their view of the entire transportation supply chain.

EPA supplies the platform: accurate, fine-grained accounting tools; a level, open playing field; equipment testing and certification; and public recognition for accomplishments.



Here's what happens:

1. Partners sign on by benchmarking their fuel efficiency using EPA's FLEET tool (Excel-based).
2. Each partner is assigned a PAM to help them work out any kinks with the tool, help them analyze strategies, OK their use of the SmartWay logo, and connect them with opportunities.
3. Partners report their progress yearly and compete for annual awards.

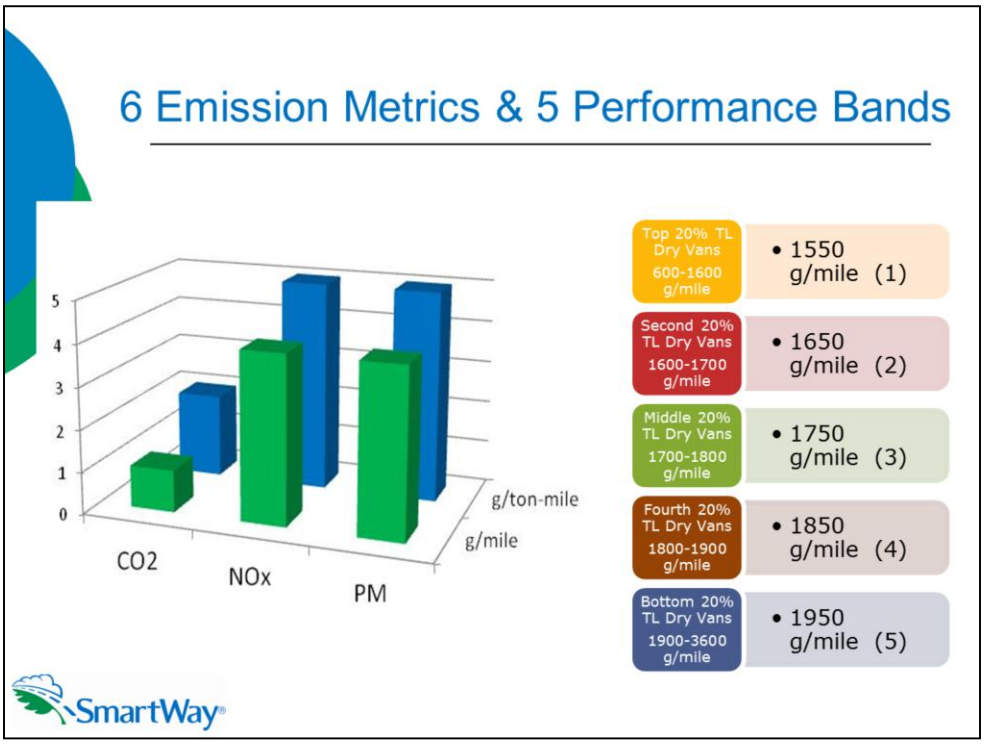


SmartWay covers a few freight modes. We just added barge; next up are ocean shipping and air freight.

Truck carriers are ranked within their subcategory, so shippers can choose carriers with the best scores for each type of cargo and delivery method. You see 4 types of duty cycle for dry van.

When a shipper types in the SCACs or other identifiers of his current carrier pool, the database will pull in the efficiency scores from any of them that are SmartWay partners, and assign a default score to all carriers not in the program (which is the lowest score among all carrier categories).

The shipper specifies how many ton-miles or miles, and payload or density (if possible) he sends or receives via each carrier, so the tool can crank out the shipper's overall score.



Each carrier is scored on 6 metrics currently: 3 pollutants, by mile & by ton-mile. Scoring is based on the info carriers enter.

SmartWay pools the data from all carrier partners within each category by metric, then divides the result into 5 performance bands, with 1 being the top 20% and 5 being the bottom 20%. For tool calculation purposes, the midpoint number of grams in each band is used. So every carrier has a performance band and a grams value for each of the 6 metrics.

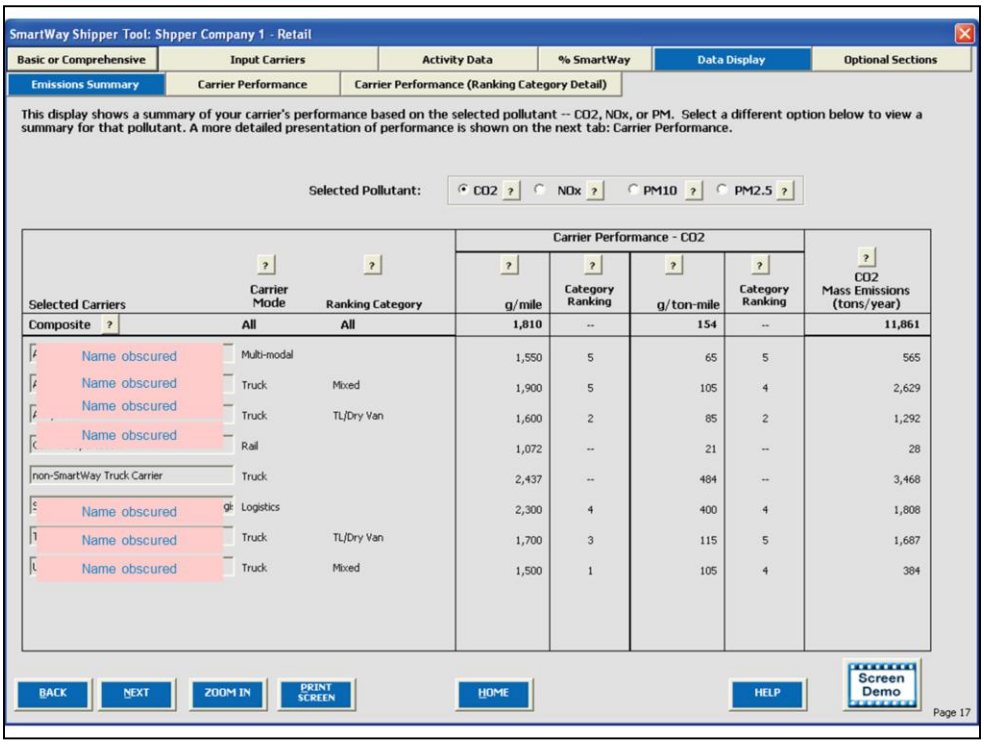
For each fleet (defined as any business unit that a customer has discretion to hire), a **truck carrier** enters info on operational category, body type, type of fuel, long- vs short-haul split, cube-out percentage, commodity type, truck class and engine model year, miles driven (total, revenue & empty), gallons of fuel used for both main engine & reefer, average payload, volume of carrying capacity & % utilized, % highway vs urban driving, avg urban speed distribution, average idling hours/truck, etc.

Logistics companies provide this same info for the carriers they use, which is a lot easier if the carrier is already a partner– otherwise, they have to enter data manually on their behalf, or accept the default. They input what proportion of the freight they move is carried by each carrier. For each carrier they can choose from 7 data types; ton-miles and miles is the preferred option. They can express outputs in 3 ways: grams per (truck) mile, grams per railcar-mile, and grams per ton-mile (all modes). They can collect and display this info separately for any business sub-units that shippers can hire.

Here's a snapshot of some strategies that SmartWay recommends to address avoidable losses of efficiency among truck carriers.

SmartWay verifies that technologies work, lists makes & models on the website, publishes fact sheets describing their benefits, and showcases successful partner practices. A truck or trailer fitted out with the basics can be SmartWay "designated" and can carry the logo.

SmartWay also helps carriers learn the benefits of "soft" strategies like driver training & incentives, load matching, routing and scheduling software, ETC.



This is an example of an Emissions Summary screen that a Shipper sees once he's entered his carriers and how much freight they carry for him.

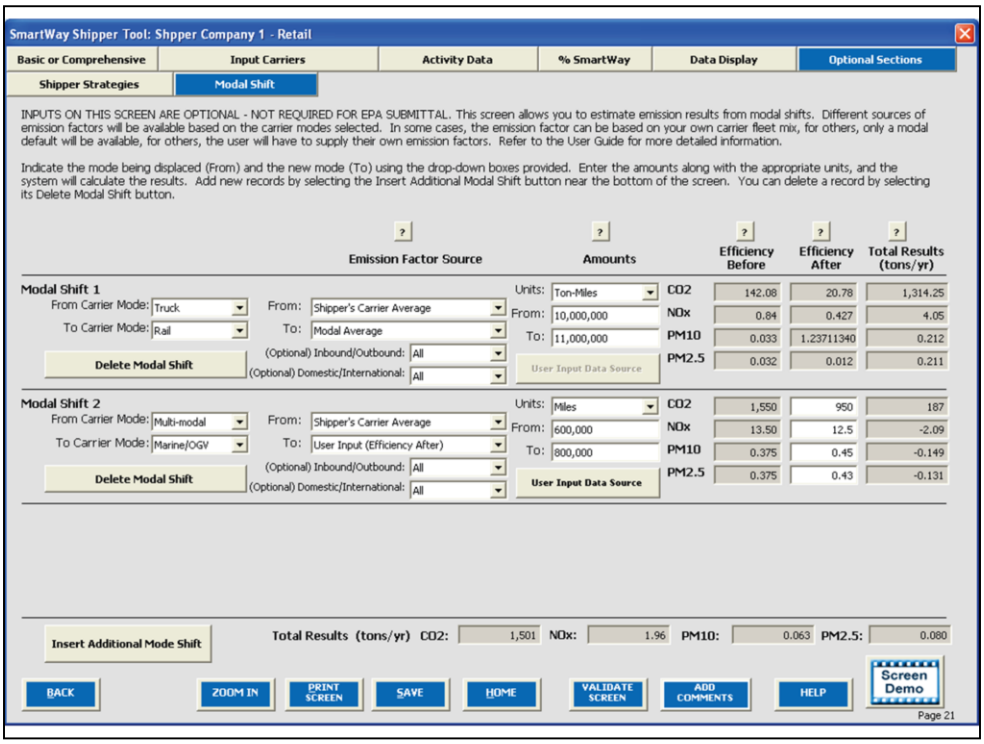
In this case, you see the shipper could do a lot better in selecting his truck carriers, because has only one carrier top-ranked for CO2, and still uses non-SmartWay truck carriers. On the other hand, he is using rail, which helps a lot.

Shippers can also calculate the benefits of, and get credit for, strategies like:

Reducing MILES through:

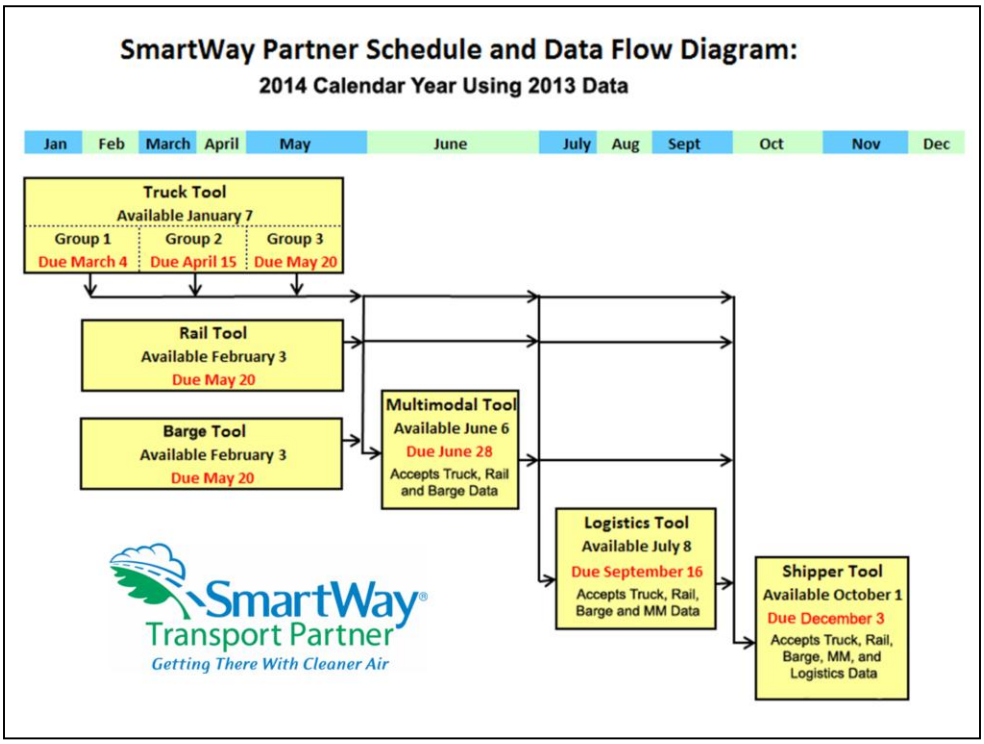
- o Distribution center relocation
- o Retail sales relocation
- o Routing optimization
- o Cube optimization
- o Larger vehicles and/or trailers

Reducing product, packaging, pallet weight.



Shippers use the mode shift section of the tool to estimate the effect of shifts from portions of their carrier base to other modes. Such efforts also count in earning recognition from EPA.

Here we see benefits from shifting from truck to rail, and from multi-modal to marine, for all emissions parameters except PM.

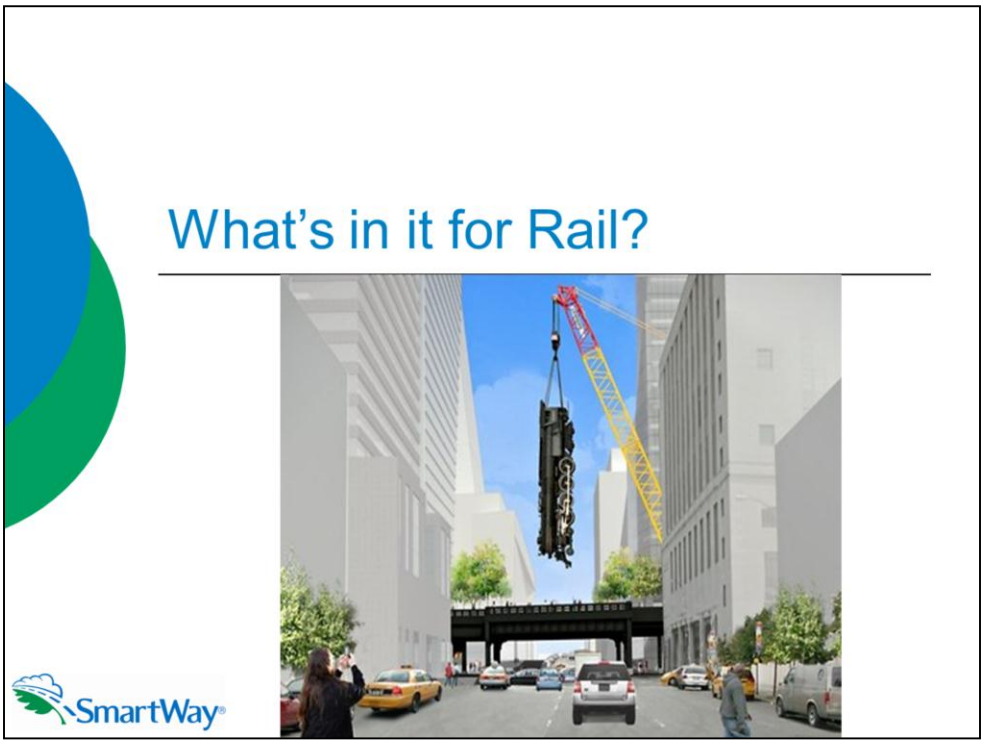


Here you see how the data submitted by carriers becomes available to and flows into the shipper tool.

Any partner that submits quality data on time can use the SmartWay partner logo. Truck carrier data deadlines are staggered by cohort to allow for EPA QA/QC.

SmartWay has a great website, regular webinars for different partner types and program facets, on-demand FLEET tool video tutorials, runs an annual Excellence Award program, and works hard to get the word out on partner accomplishments.

This partner profile is from Stanley Black & Decker, a NE-based partner that wants to use more rail.



So… why should a rail carrier join SmartWay?

How can a RR maximize the benefit of SmartWay?

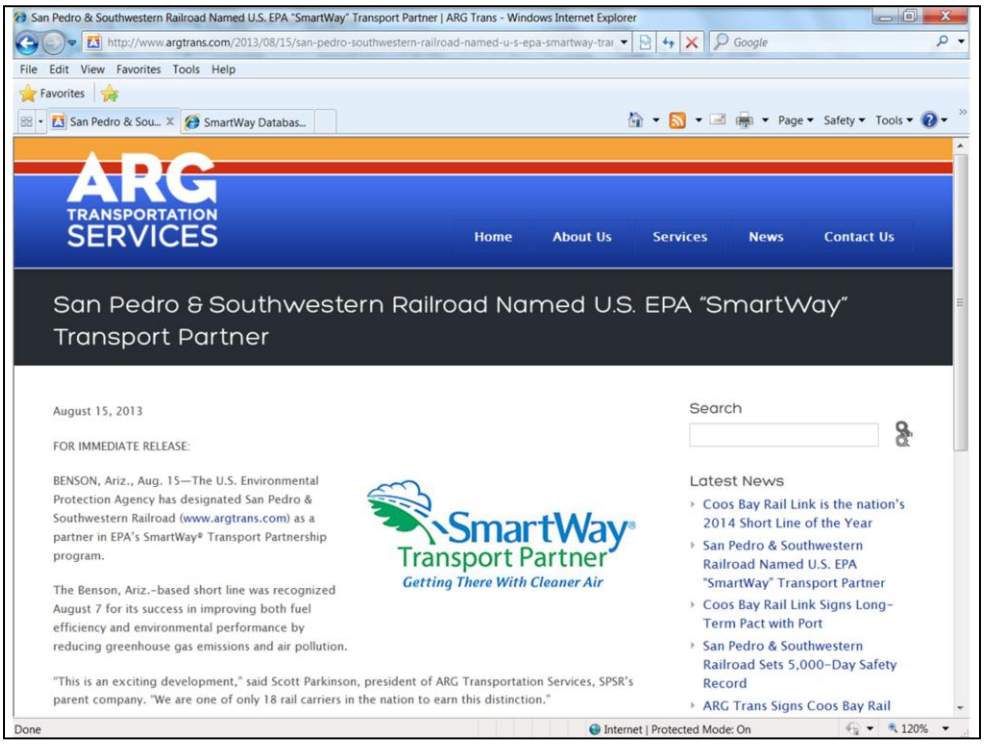
Why should a shipper that uses, or plans to use, rail join SmartWay?

(This is a sculpture proposed by Jeff Koons, a replica of a 1943 Baldwin 2900 steam locomotive, for the High Line park (an elevated rail line donated by CSX) in NYC. The sculpture, to be constructed of steel and carbon fiber, would weigh several tons. It would also occasionally spin its wheels, blow its horn and emit steam. "Train" would employ a gyroscope to stabilize the sculpture to prevent it from swaying and scaring people. This just goes to show you that Artists are even crazier than Environmentalists.)

These are all the benefits available to SmartWay rail carrier partners:

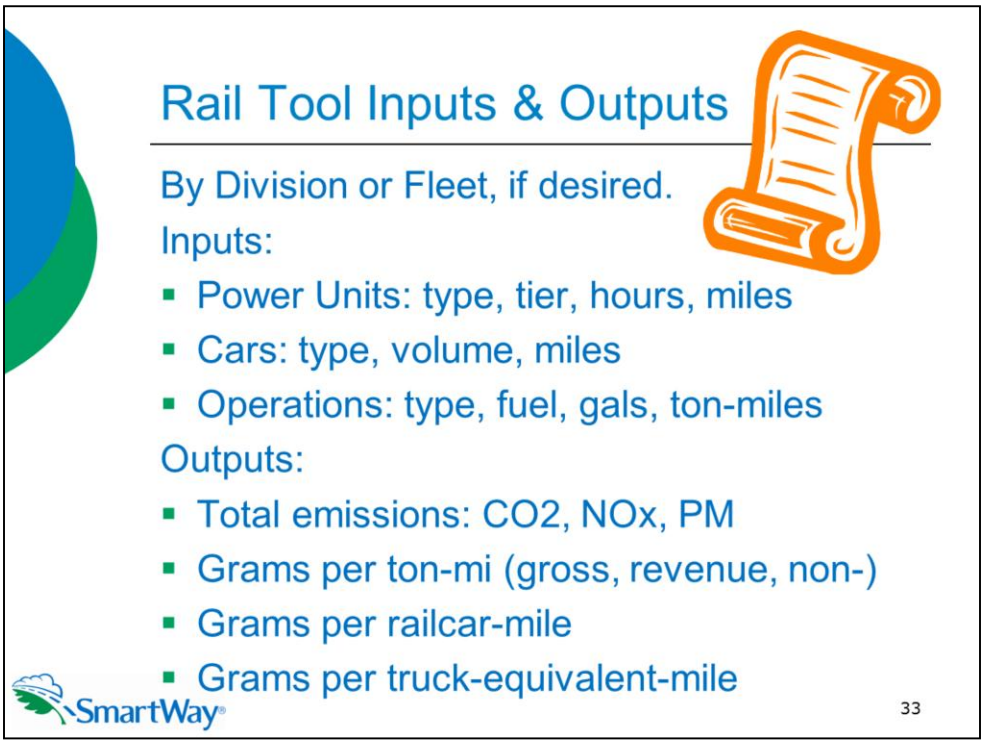
- Understanding & improving your fuel efficiency & emissions
- Enhanced business advantage due to increased appeal to shippers
- Recognition through the logo, outreach & awards
- Belonging

CSX was the first and only rail carrier partner to win a SmartWay Excellence Award thus far, back in 2007, in view of accomplishments under their voluntary action plan to equip locomotives with fuel-saving technologies.



ARG Transportation Services (formerly, Arizona Railroad Group) says: "The Smart Way program will help San Pedro & Southwestern RR keep close track of how efficient we are running and help us look into areas to further improve our efficiency from year to year."

ARG acquired San Pedro & Southwestern Railroad in 2003 from RailAmerica, Inc. ARG also operates the Coos Bay Rail Link. SPSR connects with Union Pacific's Los Angeles-Chicago main line. The company is headquartered in Eugene, Oregon. They perform other rail-related services like transloading freight between rail cars and trucks and contract switching for private industry. Currently, ARG Trans is focused on increasing rail and related transportation activities with other communities and businesses throughout the West.



Rail carriers can characterize their operations at the fleet / division level-- any unit a customer has the discretion to hire.

Here you see the info rail partners provide on their power units, cars and operations.

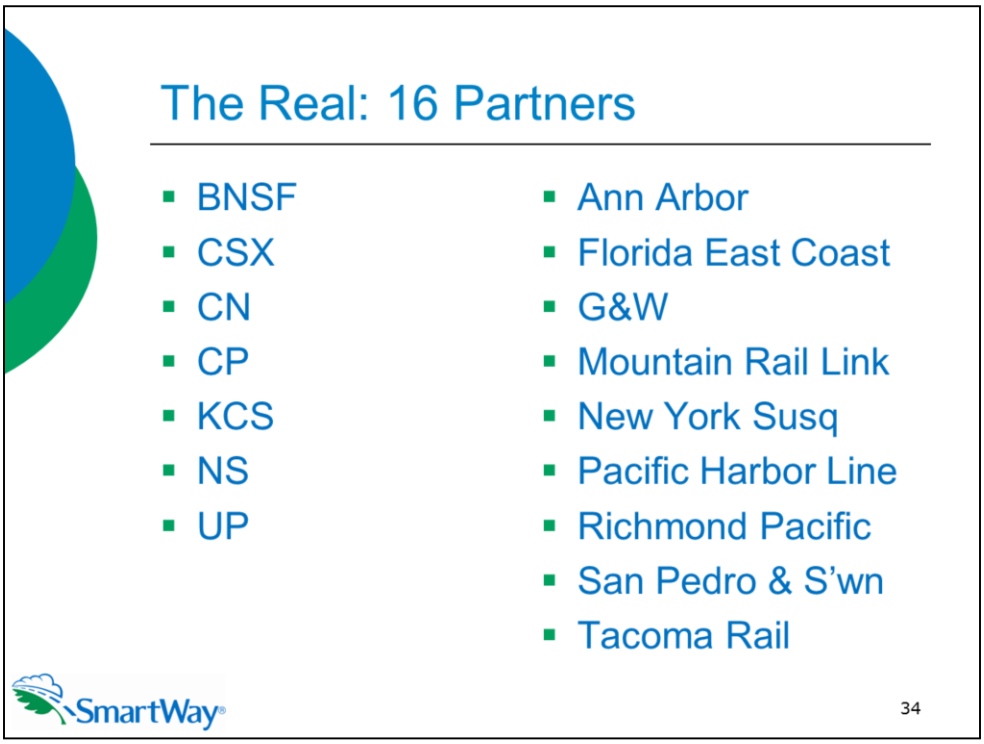
For Power Units, RRs can differentiate switch vs line haul. Class Is also enter Locomotive Unit Miles per year (unit, way, through, interchange, and yard switching operations).

For Cars, Class Is also enter railcar miles/year.

For Operations, RRs specify operation type (freight, switch, passenger), fuel type (diesel, biodiesel, nat gas, etc) and amount of each used annually, and ton-miles (gross, revenue, & non-revenue).

Inputs to the FLEET tool largely rely on data that Class I RRs already submit to FRA annually in their R1 reports– Forms 710, 750 & 755. Class 2s and 3s can provide company info or use surrogate data based on Class I operations.

Out the other end of the tool, you'll get numbers and graphs that characterize your emissions and help you see change over time.



The reality is that SmartWay has 16 RR partners, of which only one-- San Pedro & Southwestern-- is up-to-date with their model. As a result, they are the only one that can use the partner logo. The same 2010 default "rail mode average" emission factors are used currently for both rail partners and non-partners, so that's what Shipper, Logistics and Multi-Modal partners get when they type a RR's name into their tools.

SmartWay & AAR have been working together for years to make the program work for rail more like it does for truck. EPA wants to better represent, increase and distinguish RRs' contributions to SmartWay. Hurdles include sensitivity about providing information, and less competitiveness among RRs than among other freight handlers (e.g., trucking companies).

At any rate, we can do better than this. SmartWay and AAR leadership continue to work on streamlining the tool, giving more credit for operational strategies, harmonizing with DOT reporting dates, and rewarding all this with more visibility for rail.

In the Meantime…

SmartWay

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Here's what RRs can do to help in the meantime:

- If you're not already in the program, join.
  - Having lots of RRs in the program will show mode buy-in, which encourages Shippers to think that rail will help them reduce emissions and look good. It might nudge them toward using rail if they're on the fence, maybe even apply for an IRAP grant to put in a siding!
  - If your data passes muster and you update yearly, you can use the partner logo. That could help your image with customers.

- Help recruit your shipper customers to SmartWay.
  - Explain that just by using your RR to haul their freight, they are getting a lot of credit for emissions reduction that will look good in their FLEET model and in their corporate sustainability reporting.

Also in the meantime…SmartWay shipper & logistics partners are increasing their rail share.

Several SmartWay Shippers based in NE have presented at NEARS in the past– Sappi, TJX, CVS, Diageo, Ocean Spray, others– and most of them have stated more compellingly than I could the benefits of SmartWay for rail shippers. SmartWay Logistics partners who help shippers figure out how to use rail, like Alliance, Transplace and Odyssey, are also familiar to you.

Some Shipper partner results documented in SmartWay partner profiles, and by EDF's "Green Freight" showcase, include:

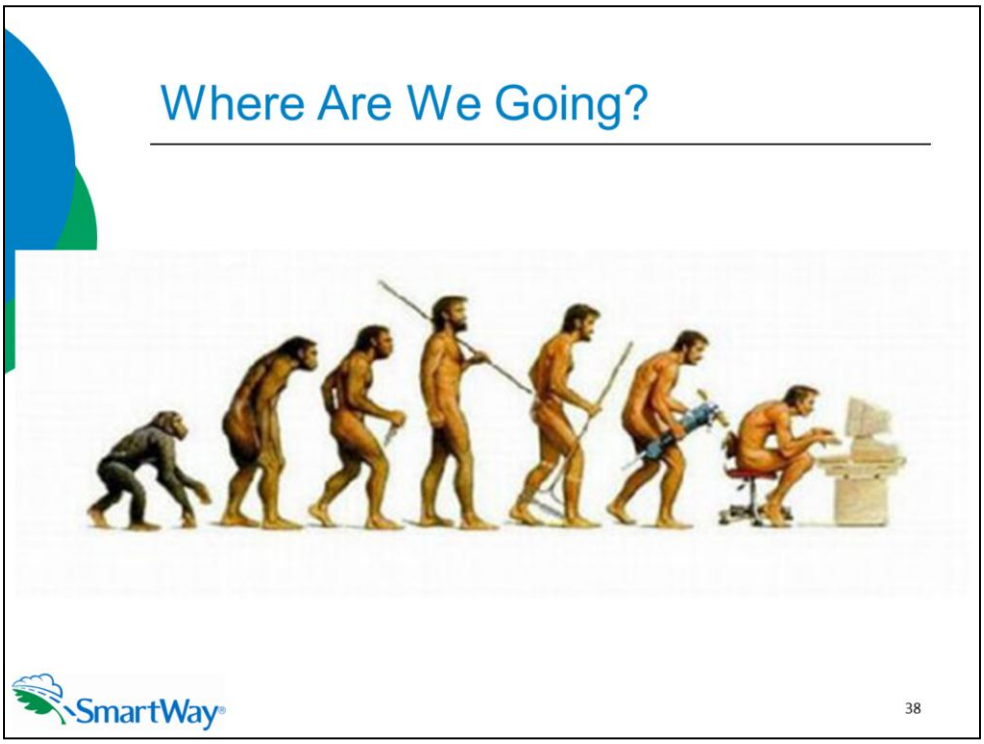
- Stanley Black & Decker shifted over a million inbound & outbound freight miles to rail in 2012 in NA, and more in Europe.
- Ocean Spray estimates that they've saved 14,000 tons of CO2 per year by shifting truck to rail, filling another shipper's empty CSX rail backhaul between NJ and FL.
- Stonyfield uses rail to ship yogurt to West Coast markets, explicitly for CO2 reduction reasons.
- Tyson Foods ships food and byproducts increasingly via freight, substituting 18.8 million rail miles for 74 million truck miles in 2011.
- Boise shifted outbound freight from truck to rail, instituted "carload direct" service to OfficeMax DCs, and reduced CO2 emissions by 60%. They engineered a 3- tier pallet system (2 full pallets and one half-pallet) for maxing out railcar capacity, reducing CO2 another 5%.

RRs can also contribute by using devices that the SmartWay Technology Program verifies as effective in saving fuel by reducing locomotive main-engine idling. These devices are eligible for Clean Diesel funding. They make your neighbors much happier, which means I get fewer complaints.

Shore Connection Systems (SCS), which allow locomotives with jacket water heaters or head end power units to "plug into" an electrical power source to maintain parameters without relying on diesel engines.

Auxiliary Power Units (APUs) and fuel-operated heaters that use smaller, cleaner diesel-powered engines to make heat and power to take care of a variety of parameters wherever the locomotive happens to be.

Automatic Engine Stop Start (AESS) systems that simply start and stop the main engine to maintain parameters.



Speaking of neighbors…

- There's a lot of attention in the DOT world to "freight as a good neighbor" potential, in an effort to get beyond NIMBY, beyond a "smart growth" approach that focuses on transit & bikes but forgets about freight, and to tamp down the emissions impacts of freight facilities on abutters, which are often EJ areas.
- How could this play out for railroads and rail shippers in New England? Well, some compromise-oriented people have proposed a set of voluntary best practices for siting, equipping and operating rail freight facilities.
- It starts with conversations between carriers, shippers and public officials, about the importance and rights of freight, and the same of neighborhoods.
- It requires shared public and private responsibility for planning, siting, and funding well-functioning freight facilities.
- It seeks the sweet spot where economic, environmental and social benefits intersect for both freight operators and communities.
- It involves practices, technologies and protocols derived from SmartWay that reduce emissions and noise, while saving fuel and preserving operational flexibility.
- I have a few paper copies of the current draft of these BPs, and would be glad to convey your feedback to the authors.
- I am pleased to report that "SmartWay in Your Community" is now a criterion on the semi-finalist application for SmartWay Excellence Awards!

Everything you need for SmartWay is on the website, but please call me if you need help navigating, want a simple explanation, or need me to track down special info for you.

I'd be glad to help you present SmartWay to your colleagues and business partners.