Environment Canada Environnement Canada

Canada

Reducing Locomotive Emissions

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BC Clean Air Forum

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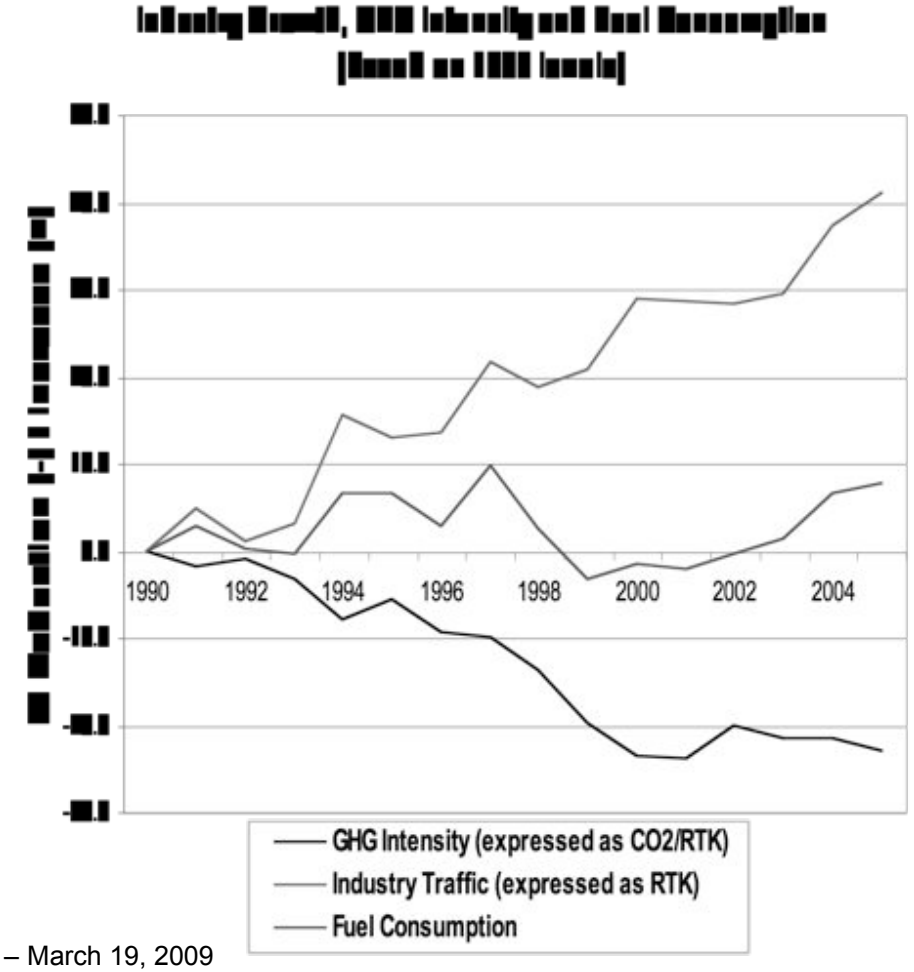
Complex issue

- Locomotive engines can be rebuilt 5-10 times and can last for 50+ years
- Federally regulated railways (Transport Canada)
  - CN, CP, VIA, BNSF…
  - Vast majority of the locomotives in BC
- Provincially regulated
  - Some short lines (e.g. Southern Railway of BC)
  - Commuter / tourist operators (e.g. West Coast Express; Rocky Mountaineer)
  - Industrial railways (locomotives at port terminals, pulp mills etc.)
- Local issues
  - Railyard idling / air quality and noise complaints – Canadian Transportation Agency
  - Municipal idling bylaws do not apply
  - Health risk assessments (California)
  - Dialogue with individual companies / yards – slow progress

Railways improving energy efficiency

- Cargo and passenger volumes have grown 40% since 1990
- Fuel consumption levels are relatively unchanged
- Substantial improvement in GHG intensity



Rail Emissions in Canada

	PM2.5 (t)	NOx (t)	CO2e (kt)
Rail Emissions	3,706	117,000	6400
% of Mobile	5.8%	9.4%	3.3%

Source: Environment Canada's 2005 CAC Emissions Inventory and 2006 GHG Emissions Inventory

- Without regulatory action, CAC emissions projected to rise relative to other mobile sources

Memorandum Of Understanding (MOU)

- MOU between Transport Canada, Environment Canada and the Railway Association of Canada – through Dec. 31, 2010

- Company-specific commitments by CN, CP, GO Transit and VIA to:
  - Purchase only EPA-certified locomotives
  - Upgrade, upon remanufacture, high horsepower engines to EPA standards; start retrofitting medium horsepower engines in 2010

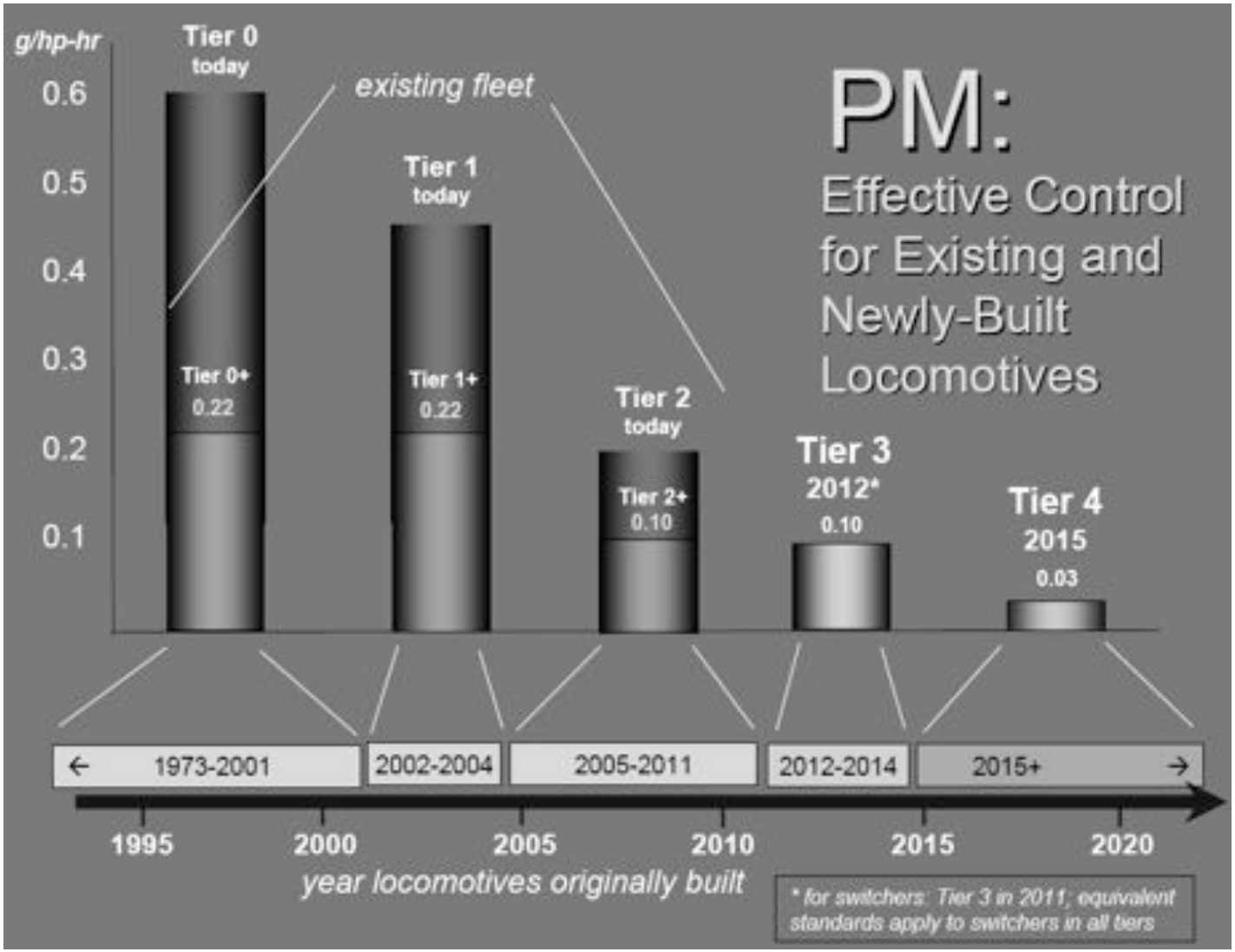
- RAC commit to:
  - Develop an action plan to achieve intensity-based targets for GHGs
  - Encourage operating practices to reduce smog-forming emissions
  - Annual progress / emissions reports

Notice of Intent - Regulations

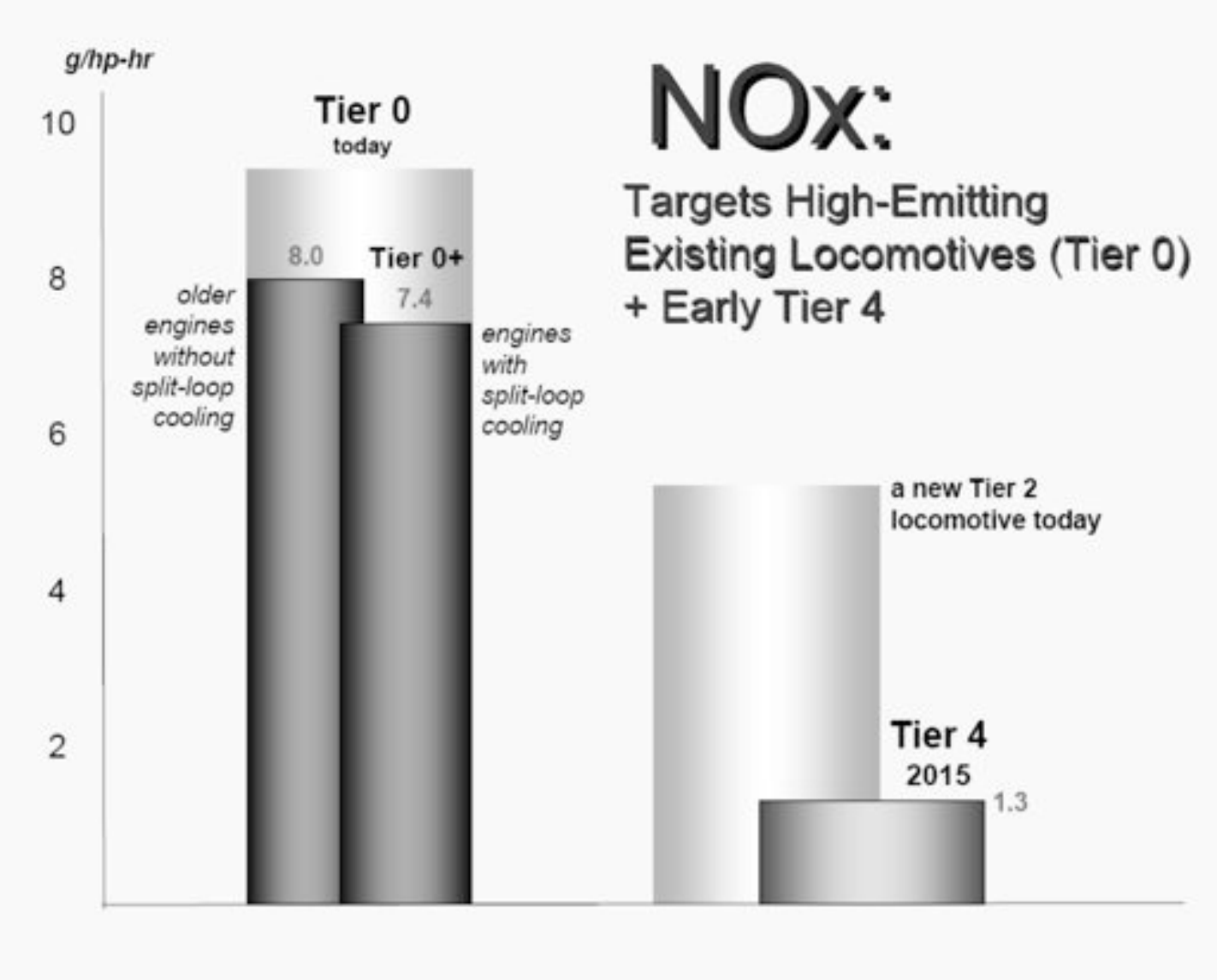
- Transport Canada will adopt new regulations under the Railway Safety Act, effective 2011
- Aligned with US EPA
- Canada intends to regulate GHG emissions from locomotives

Photo: http://www.noltair.com/photos/agreement2.jpg

New EPA standards - PM



New EPA standards - NOx



Summary - new regulations

- Canada will align with US EPA standards by 2011
- New standards - Tier 3 and 4
- Revised for remanufacture - Tier 0+, 1+, 2+
- Idle reduction component
- Provincially regulated railways are not subject to the *Railway Safety Act*
- US - exemptions for short lines (1-2% of locomotives)

Government-led initiatives

- BC Locomotive and Rail Air Quality Work Group
- ecoFREIGHT projects
- Metro Vancouver - Idle Reduction Study and Training Guide
- Environment Canada emission reduction demonstrations
  - West Coast Express DOCs
  - SRY biodiesel
- Railyard Air Quality Effects Assessment
- Railway anti-idling policies and equipment
- Railway fuel efficiency measures (e.g. track lubrication) and fleet modernization
- Right-sizing switchers – multi-gensets
- NRCan – biodiesel demonstration

Industry-led initiatives

- Railway anti-idling policies and equipment
- Railway fuel efficiency measures (e.g. track lubrication)
- Fleet modernization
- Right-sizing switchers – multi-gensets
- Hybrid locomotives

EC – rail initiatives in BC

Biodiesel testing at Southern Railway of BC (2008)

- Baseline ULSD, B5 and B10
- Do not recommend use of biodiesel as a CAC emission reduction measure in roots-blown, non-turbocharged locomotives

- West Coast Express demonstrations (2008-2009)
  - 2008 - Miratech DOC installed pre-turbocharger
    38% reduction in PM
  - 2009 – ESW DOC and CCV to be tested

- BC Locomotive and Rail Air Quality Work Group
  - Government and industry representatives
  - Information-sharing, reducing emissions and local air impacts

Challenges

Prince George, BC - Photos courtesy of
BC Ministry of Environment

Challenges

- Local air quality issues
  - Railways were there first – poor urban planning
  - Private land; federally regulated
  - Current dispute resolution process does not address air quality
  - Railway anti-idling policies not always adhered to
- Railways making system improvements
  - GHG intensity is down
  - Newer, cleaner engines on line-haul service
  - But – older, higher-emitting locomotives are retired to switching service at railyards (near populated areas)

Carbon Offsets and Rail Transport

- Fast track eligibility list under EC's Guide for Protocol Developers
  - http://www.ec.gc.ca/creditscompensatoires-offsets/default.asp?lang=En&n=7CAD67C6-1&offset=14&toc=show
- Protocol no. 36 – carbon offsets for freight modal shift to more efficient modes (e.g. truck to rail)
- Protocols will undergo a technical review
- Projects may be required to identify and address any negative environmental impacts (e.g. increased CAC emissions)

Thank you

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