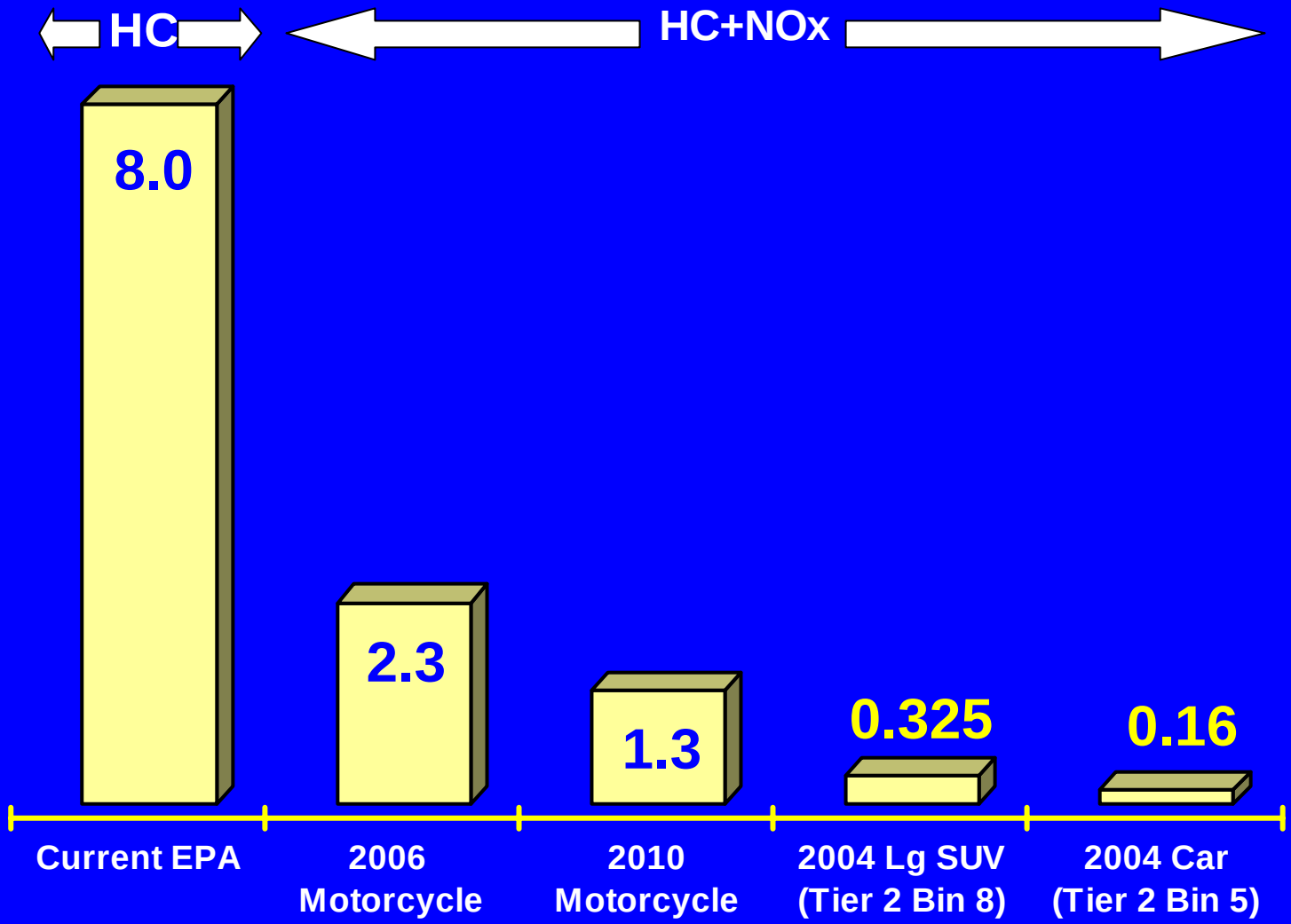
Highway Motorcycles: EPA Regulations and Global Activity Update

March 9, 2005

New Regulations

- Final Rule (69 FR 2398, January 15, 2004)
  - 2 “tiers” of new exhaust emission standards, effective in 2006 and in 2010
  - Harmonized with California w/2-year delay
  - New standards to control permeation of gasoline through fuel hoses and fuel tanks
  - New standards for mopeds and scooters with <50cc displacement engines (previously an unregulated category)
  - Provisions for small manufacturers

Current & New Motorcycle Standards
(grams per mile)



Tier 1 Exhaust Program: 2006

Class	Displacement	Useful Life	HC	CO	Nox
Class I-A	<50cc	5yr/ 6000 km	1.0 g/km*	12 g/km	n/a*
Class I-B	50-169 cc	5 yr/ 12000 km			
Class II	170-279cc	5yr/ 18000 km			
			HC+NOx		
Class III	>279cc		1.4 g/km	12 g/km	n/a

*Final rule includes optional HC+NOx standard of 1.4 g/km

- Small manufacturers start Tier 1 in 2008

Averaging Standards

- Exhaust HC+NOx are averaging standards
- Averaging allowed between Classes I and II and within Class III
- Early banking allowed for Tier 2, similar to CA program
- FEL caps (g/km HC+NOx)
  - Class I and II 2006+ 5.0
  - Class III 2006-2009 5.0
  - Class III 2010+ 2.5

Tier 2 Exhaust Program: 2010

Class	Displacement	Useful Life	HC+NOx	CO	NOx
Class III	>279cc	5 yr/ 30000 km	0.8 g/km	12 g/km	n/a

- Small manufacturers are currently exempt from Tier 2
- Manufacturers may meet the HC+NOx standard on average, which enables them to sell motorcycles using a range of technologies.

Permeation Emission Control

- Final rule requires low permeation fuel tanks and hoses
- 90% or more motorcycles have metal fuel tanks; these meet the tank standards by definition
- Plastic fuel tanks (~10% of motorcycles) can use one of several existing barrier technologies
- There are existing fuel hoses using barrier treatments or materials with low permeation
- Effective in 2008 (2010 for small manufacturers)

New Provisions for Smalls

- Apply to manufacturers with less than 3000 U.S. sales and fewer than 500 employees
  - Extra time to meet standards
    - Tier 1 standards apply in 2008, two years after larger manufacturers
  - Exemption from more stringent standards
    - Tier 2 standards do not apply
- **Note:** The vast majority of these manufacturers buy engines from engine companies like S&S

Hardship Provisions

- The following applies to all manufacturers
  - Requirements may be waived under unusual circumstances if good faith efforts to comply have been made and if solvency is in jeopardy
- The following applies to small bike makers
  - The deadline for compliance (2008) may be extended if all efforts to comply have been made, if it is the burden of compliance that is the issue, & if the solvency of the firm is in jeopardy.

What's Next?

- California 2006 Technology Progress Review
- Development of Engine Standards and Test Procedures
- World Motorcycle Test Cycle (WMTC)
- Minor fixes/revisions in proposed technical amendments

2006 CA Progress Review

- "…to evaluate the success, cost, and consumer acceptance of engine modifications employed to meet Tier-1...and to…review and discuss manufacturers' efforts to meet Tier-2…"
- Tier 2 exemption for small manufacturers may be reevaluated.
- EPA will participate and make adjustments to the program if deemed necessary.
- May involve a Federal Register notice, public workshop(s), discussions with makers & users, ...

Potential Future Engine Program

- May be part of 2006 review or WMTC
- Would benefit small manufacturers who do not build engines
- Would likely increase compliance by smaller manufacturers
- We did not finalize this because of a limited rulemaking record and lack of a defined test procedure and appropriate standards

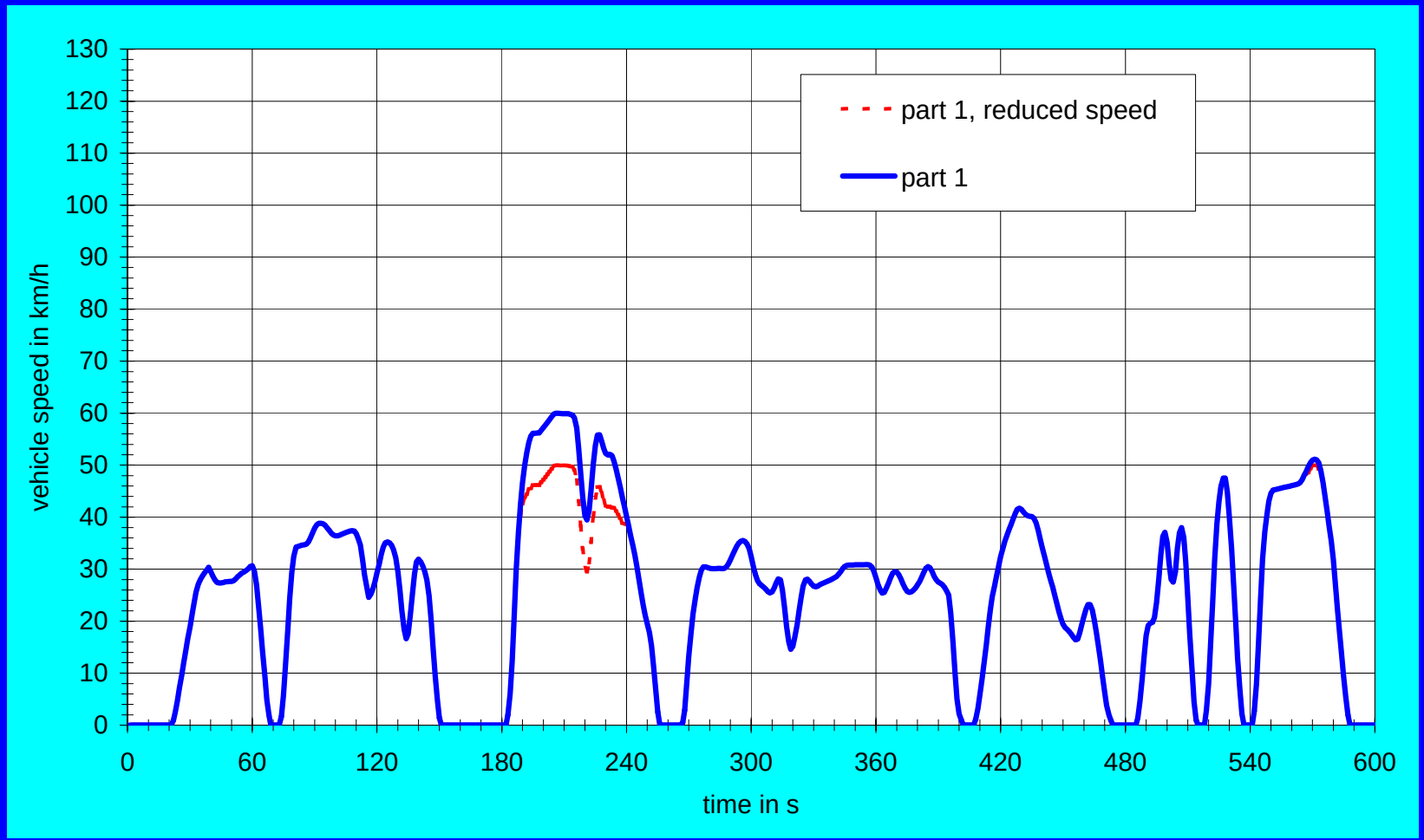
World Motorcycle Test Cycle

- World Motorcycle Test Cycle (WMTC)
  - An ongoing effort under the United Nations
  - Goal: Develop a scientifically supported test cycle that represents how motorcycles are actually driven
  - Would help manufacturers of all sizes market products internationally
  - WMTC is more representative in speed, acceleration, & shift points than FTP
  - Could be proposed in next 1-2 years, depending on completion of international process

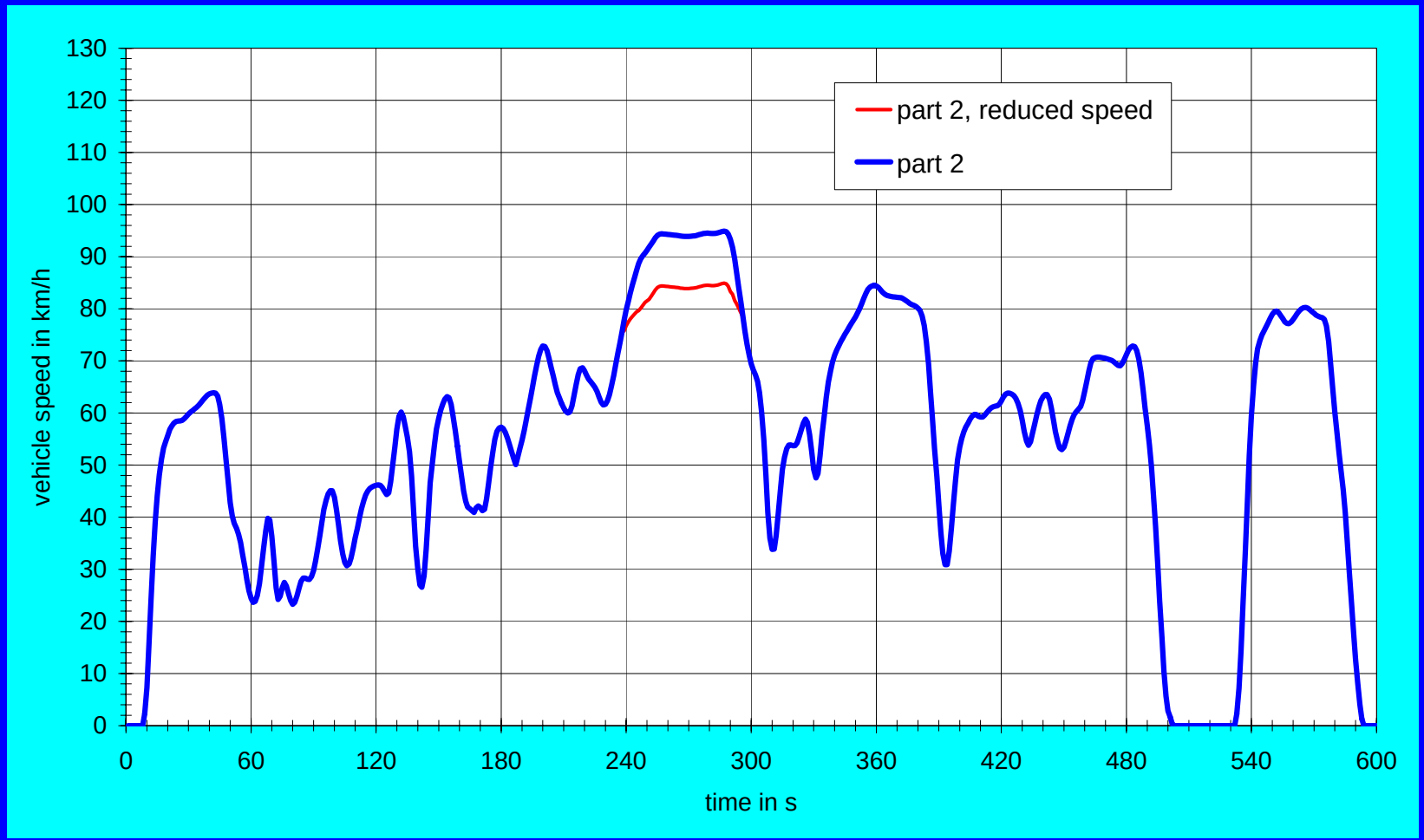
WMTC Test Cycle

- 3 parts, each 600 seconds long
- Part 1: urban driving, top speed = 60 kph
- Part 2: secondary rural roads, top speed = 95 kph
- Part 3: rural roads & highways, top speed = 125 kph
- Shift points calculated from vehicle parameters (e.g., rated power, mass, rated engine speed, etc.)
- 3 motorcycle classes, 9 subclasses

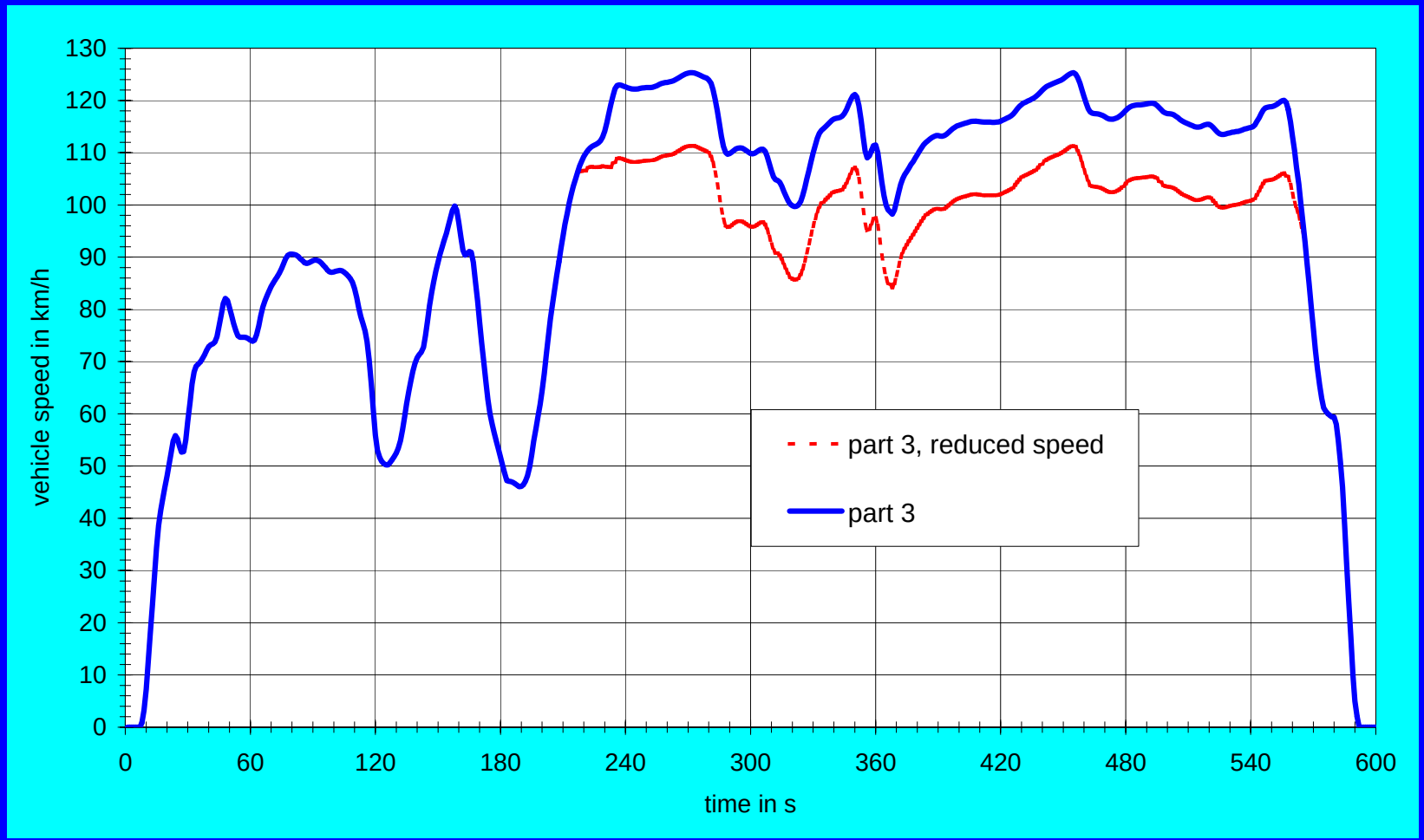
WMTC – Part 1


part 1, reduced speed
part 1
vehicle speed in km/h
time in s
0
10
20
30
40
50
60
70
80
90
100
110
120
130
0
60
120
180
240
300
360
420
480
540
600

WMTC – Part 2


part 2, reduced speed
part 2
vehicle speed in km/h
time in s
0
10
20
30
40
50
60
70
80
90
100
110
120
130
0
60
120
180
240
300
360
420
480
540
600

WMTC – Part 3


vehicle speed in km/h
time in s
part 3, reduced speed
part 3
0
10
20
30
40
50
60
70
80
90
100
110
120
130
0
60
120
180
240
300
360
420
480
540
600

Technical Amendments

- Proposed amendments – 69 FR 54846, 9/10/2004
- Fuel specifications
  - See proposed 86.513-2004
  - E.g., volume % aromatics changed from “35 minimum” to “35 maximum”
- Labeling
  - See proposed 86.413-2006
  - Accounts for averaging standards; includes FELs
  - Similar to and can be combined with CA requirements
- Other