

Regional Fuels and the MOVES Default Fuel Supply

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Background / Overview

- **Current MOVES default fuel supplies are based on fuel survey data and single point county data**
- **Survey data has tended to include large variations, and may show fuel supply differences where none actually exist**
- **Simplifying the default fuel supplies eases use and decreases MOVES run time**
- **Modifications to the fuel supplies should be easier, and informed by as much data as possible**

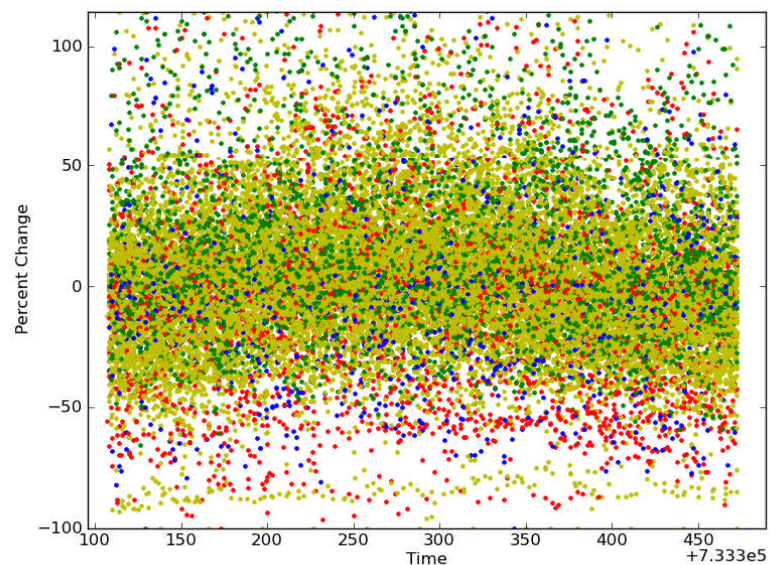
Why change the default fuel supply?

- **MOVES 2010b default fuel supply built from many sources of data: AAM fuel surveys, RFG surveys, state and county surveys**
- **The 2010b fuel is used in many places**
 - NEI 2008
 - Tier 3 NPRM
 - Countless user analyses
- **Survey data, while probably accurate samples, cannot form a basis for regional/national fuel properties**

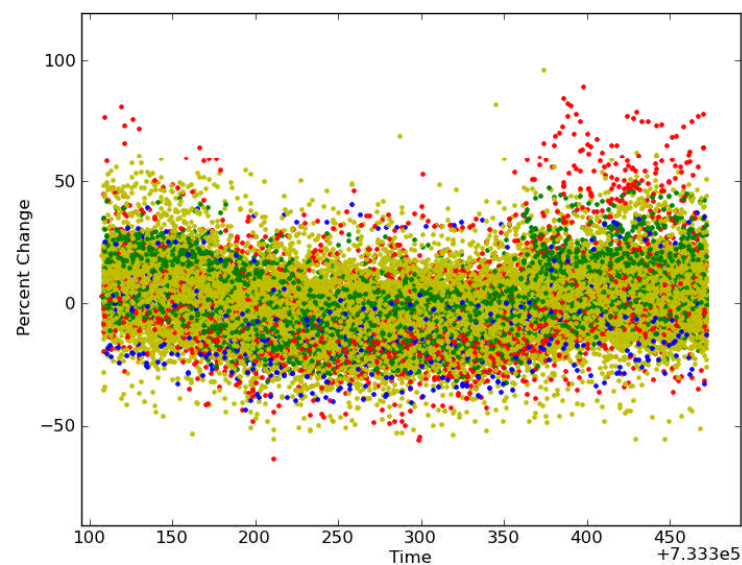


Batch properties vary widely!

Aromatics



E200



- Survey data could be any one of these points, it's tough to say that any one of these points is "THE" data for a given county/location

A much larger set of data exists

- **Certification data: batch-by-batch refinery gate reports on fuel properties**
 - Approx. 28,000 batches of CG reported in 2007
 - Production locations and volumes known
 - Will have 2011 data shortly
- **RFG Database**
 - 100's of survey points in each RFG region
 - Easy to get for many other years
- **Hart Study: Ethanol penetration by state 2006-2009**
- **AEO Month-to-Month penetrations projected to 2020**



A summary of regional inputs

CG REGIONAL FUEL DATA																						
REGION	DESCRIPTION	E10	E15	E85	SUMMER								WINTER									
					RVP	SULF	AROM	OLEF	BENZ	E200	E300	T50	T90	RVP	SULF	AROM	OLEF	BENZ	E200	E300	T50	T90
1	East Coast	0.13	0	0	8.45	32.99	27.65	12.61	1.013	44.13	80.35	214.9	337.3	11.29	32.93	24.79	12.50	0.923	48.47	82.67	202.9	329.7
2	Midwest	0.42	0	0	8.46	42.00	28.52	9.95	1.540	47.57	81.12	212.1	340.1	11.84	35.77	25.51	9.36	1.495	52.03	84.02	198.7	239.2
3	South	0.26	0	0	8.10	65.06	28.02	11.08	1.375	44.74	82.45	212.9	327.2	10.86	64.57	25.40	10.94	1.321	48.82	84.53	202.9	322.3
4	North	0.7	0	0	9.01	37.92	24.53	8.65	1.211	49.56	82.38	200.4	333.0	12.55	32.90	21.67	8.67	1.081	52.49	85.06	195.2	322.3
5	Rocky Mts	0.31	0	0	8.38	65.06	28.17	9.67	1.765	45.63	85.10	208.7	319.0	11.75	57.50	25.76	9.50	1.737	50.41	86.84	199.5	311.4
6	CA/NV/AR	0.02	0	0	8.10	65.06	28.02	11.08	1.375	44.74	82.45	212.9	327.2	10.86	64.57	25.40	10.94	1.321	48.82	84.53	202.9	322.3

Adjusting RVP to account for downstream blending

RFG REGIONAL FUEL DATA													
REGION	DESCRIPTION	E10	E15	E85	RVP	SULF	AROM	OLEF	BENZ	E200	E300	T50	T90
NE - N	East Coast	1	0	0	6.90	33.12	21.69	11.61	0.641	50.26	84.97	196.2	322.7
NE - S	MD / VA	1	0	0	6.91	35.10	20.11	11.76	0.626	50.35	83.84	195.4	331.1
TEX	Texas	1	0	0	6.92	30.12	16.65	11.12	0.533	50.58	85.05	196.1	329.0
MID	Midwest	1	0	0	7.06	32.12	17.13	7.85	0.774	50.98	85.24	193.2	326.7

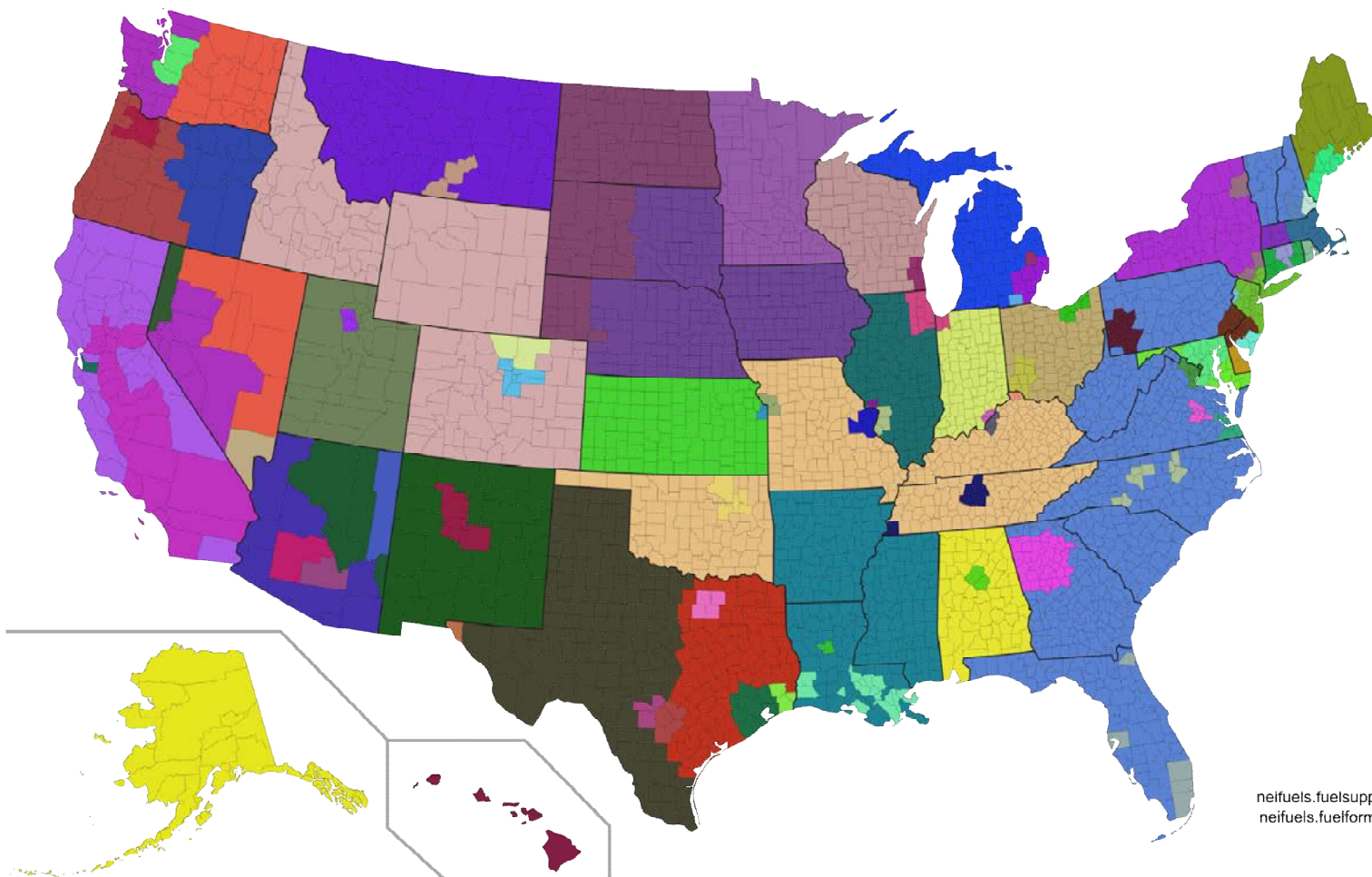
Winter RFG supplies adjusted to CG RVP level using boutique adjustment factor

CALIFORNIA FUEL DATA											
REGION	DESCRIPTION	EthOH	RVP	SULF	AROM	OLEF	BENZ	E200	E300	T50	T90
CAL (15)	California	5.7	7.06	9.00	21.98	4.44	0.530	44.52	88.81	211.0	303.0

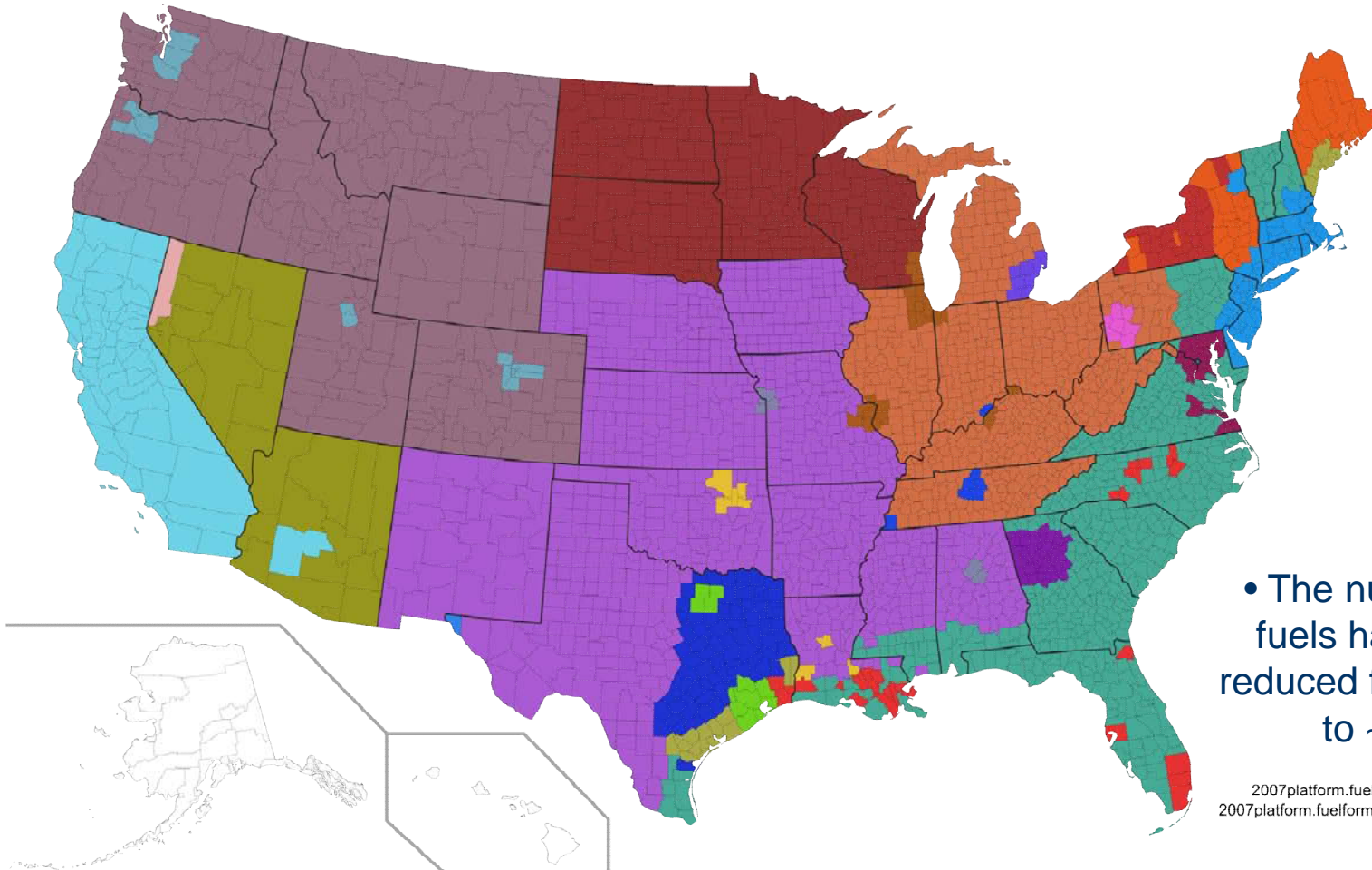
Ethanol and Boutique fuel adjustment factors based on refinery modeling from Tier 3



2010b Default Fuel Supply Map



Regional Fuel Supply Map



- The number of fuels has been reduced from ~300 to ~40!

2007platform.fuelsupply
2007platform.fuelformulation

Next Steps

- **Regional fuels will become the default fuel supply for future MOVES versions for CY2013+**
 - Possible retroactive change to default fuel supply back to 2004, depending on availability of data
- **2011 compliance data will finish analysis shortly, integrated into future versions of regional default fuel supply**
- **Integration of fuel property “Fuel Wizard” into future versions of MOVES, allowing fuel property changes to take advantage of refinery modeling data**



The Fuel Wizard



- Many users have expressed interest in modeling scenarios with different fuel properties (eg. CG vs. Low-RVP vs. RFG)
- Changes in fuel properties are not as simple as changing the one parameter of interest (changing RVP changes T50, T90, aromatics and other properties)
- Internal refinery modeling data exists for individual property changes above (for use in rulemaking analyses)
- These property changes should be easy for a user to make, with the appropriate other properties changing in turn

The Fuel Wizard (cont.)



- **The proposed fuel wizard will:**
 - Provide a simple interface for users to make fuel property changes without prior advanced knowledge of fuels
 - Automatically make other fuel property changes based on user-made fuel property changes
 - Create a new user fuel database using these modified fuels for use in that user's new modeling scenario
- **The fuel wizard will be integrated into the existing County Data Manager 'Fuels' tab to ease use**
- **A solution for national fuel changes is being considered**