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Discussion of Concepts for Materials Recovery Facility (MRF) Performance Standards

CalRecycle Workshop

September 19, 2012

Byron Sher Auditorium

1:30 – 4:00



Main Topics of the Day:

- Topic 1: Define mixed waste processing comparable to source separation
- Topic 2: Standards for MRF residuals to be used for energy recovery (when is this considered the highest, best use for these residuals?)

E-mail comments and questions to:

MRFFStandards@CalRecycle.ca.gov

Workshop Outline

- Context – MRFs and AB 341 and Beyond
- Background on MRFs
 - Existing CalRecycle and other data
 - Information gathering
- Topic 1: Define mixed waste processing comparable to source separation
 - Issues
 - Options for setting standards
 - Q & A

BREAK (approximately 2:45)

Workshop Outline (cont.)

- Topic 2: Standards for MRF residuals to be used for energy recovery (when is this considered the highest, best use for these residuals?)
 - Issues
 - Options for setting standards
 - Q & A
- Next steps
 - More workshops possible
 - Opportunity for more input – next 2 weeks

Context – 75% Goal

- Option 3b: Increase requirements for MRF performance
 - Potential for more recycling if all MRFs must meet standards
 - Mandatory commercial recycling requirement for mixed waste processing to be comparable to source separation
- Option 10a: Define post-recycled residuals
 - Contain less than a specified amount of recyclables in residuals
 - Results in increased amounts of recyclables recovered

<http://www.calrecycle.ca.gov/75Percent/>

Context – AB 341 Requirements for Mandatory Commercial Recycling (Topic 1)

PRC 42649.2(b) “A commercial waste generator shall take at least one of the following actions:

(1) Source separate recyclable materials from solid waste and subscribe to a basic level of recycling service that includes collection, self-hauling, or other arrangements for the pickup of the recyclable materials.

(2) Subscribe to a recycling service that may include mixed waste processing that yields diversion results comparable to source separation.”

***“Comparable to source separation” not defined
in statute or regulation***

Context –Residuals and Energy Recovery (Topic 2)

Standards for MRF residuals to be used for energy recovery (when it this considered the highest, best use for these residuals?)

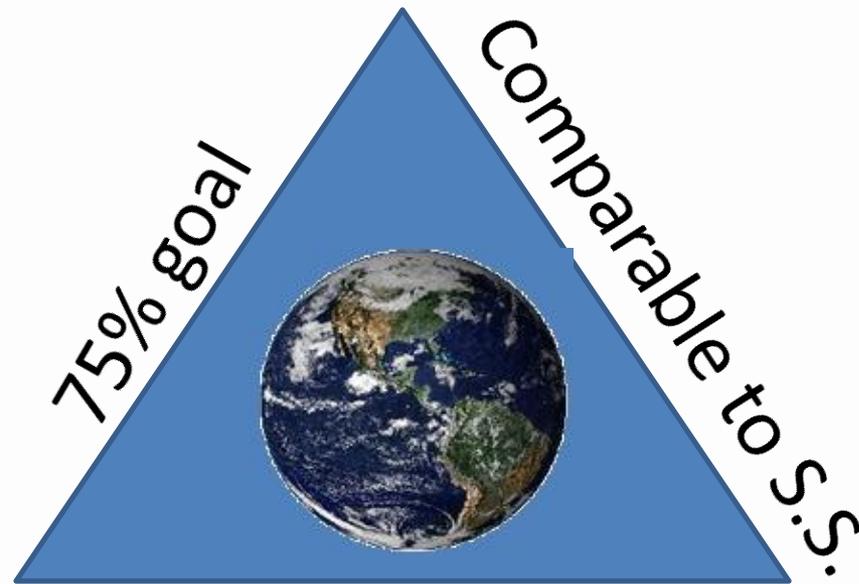
- Focus on MRF residuals today
- Ensure sufficient recyclables have been removed before residuals are used for energy
- May need to also address other criteria such as contaminants (like HHW)

Standard needs to be developed

Setting Standards

- Many options to consider
- Options are offered for discussion – this is the beginning of the process
- Not comprehensive list of options – need stakeholder input
- A combination or hybrid of listed and/or other options is possible

Context - Summarized



Post-Recycled Residuals



The Larger Context: The Waste Management Hierarchy - Generally Accepted International and US EPA Scheme



Background on MRFs – Existing Information

- Regulatory Status
- CalRecycle Data
- Other Available Data

Background on MRFs in CA – Regulatory Status

Definition in Planning Guidelines (Title 14 CCR 7 18720(a)(36)) for CIWMPs

"Materials recovery facility" means a permitted solid waste facility where solid wastes or recyclable materials are sorted or separated, by hand or by use of machinery, for the purposes of recycling or composting.

- This definition is not used for permitting purposes
- Doesn't include non-permitted facilities ("clean" MRFs)
- Could include transfer stations that do floor sorting
- Not an adequate definition

Background on MRFs in CA – Regulatory Status (cont.)

- Solid Waste Facility Permit required for mixed waste processing
- “Recycling Centers” don’t need transfer/processing permit if they meet the “3 part test”:
 - 1) Only receive material that has been separated for reuse prior to receipt.
 - (2) Residual amount of solid waste shall be less than 10% of the amount received by weight.
 - (3) Putrescible wastes shall be less than 1% of the amount of material received by weight, and shall not cause a nuisance.

Background - CalRecycle Data on MRFs

- Solid Waste Information System (SWIS) has data on permitted transfer/processing facilities, but doesn't always identify MRFs; doesn't include "clean" MRFs which are "Recycling Centers"
- Division of Recycling (bottle bill) lists recycling centers, processors, curbside programs – MRFs can be in any or all of these lists but can't be easily identified as MRFs
- Disposal Reporting System (DRS) requires reporting only by permitted MRFs
- Facility Information Toolbox (FacIT) includes a list and some information (but not comprehensive) on permitted and non-permitted MRFs
- Data does not easily compile into comprehensive information on numbers, types, tonnages, waste streams processed, etc.

Background on MRFs in CA – Other Data Sources

- Waste Business Journal
- Governmental Advisory Associates MRF Yearbook (2008)

Neither has comprehensive list of MRFs, but some data is very detailed

Background on MRFs in CA – Squishy Numbers

- The CalRecycle Facilities Information Toolbox (FacIT) database records activities and materials:
- 139 “intermediate processing” facilities accept “aggregated materials” of some kind for “material recovery”.
- Of the 139 facilities:
 - 96 (or 69%) process “mixed recyclables”
 - 56 (or 40%) process “mixed solid waste”
 - 54 (or 39%) process “mixed inerts/C&D”
 - 6 (or 4%) process “compostable organics”
 - An unknown number do multiple activities.
- DOR data estimates about 200 “processors” in CA – are they all MRFs?

Background on MRFs in CA – Data Gaps

- No definition that includes all MRFs
- No accurate and easy identification of all MRFs
- How many are MWPF, how many clean, how many C&D (some facilities do it all – the lines blur)?
- No current estimate of statewide tonnage processed in total and by each type of MRF
- No current statewide estimate of tonnage of residential and commercial waste processed
- No current estimate of statewide total tonnage recovered

Background on MRFs in CA – Reconnaissance

- CalRecycle staff visited 13 MRFs in various regions – clean MRFs and mixed waste processing, large and small, high tech and low tech, old and new, public and private
- WE LEARNED A LOT! But just scratched the surface

Background on MRFs in CA – What we learned

- Size range – 50 TPD to 100 TPH
- Age – oldest was last built or upgraded in 2000, newest built summer 2012
- Technology – ranged from a facility with 1 screen and the rest hand-sorting, to facilities with bag breakers, multiple screens, magnets, eddy currents, optical sorters, etc.
- Feedstock – “clean” MRFs may receive feedstock that looks a lot like what mixed waste processors receive; mixed waste processors may receive very clean material

Background on MRFs in CA – What we learned (cont.)

- Markets – some recovered and sold film plastic, some in the same vicinity didn't; only one recovered textiles, only one recovered Styrofoam
- Contract conditions vary for what must be recovered, incentives for increasing recovery, and many other aspects of operations
- Management philosophy varies – use of technology or hand-sorting; maximizing recovery; balancing costs and incomes

Background on MRFs in CA – What we learned in summary

- Every MRF is different
- MRFs are part of a system and difficult to look at separately from that system
- Local conditions (markets, contracts, proximity of other facilities, etc.) shape operations
- Multiple processes can happen at the same site – processing residential and commercial, source separated and mixed waste
- Technology and operations are constantly evolving



Topic 1 – Define mixed waste processing that yields diversion results comparable to source separation

“MWPF” = mixed waste processing facility

AB 341 Requirements for Mandatory Commercial Recycling

PRC 42649.2(b) “A commercial waste generator shall take at least one of the following actions:

(1) Source separate recyclable materials from solid waste and subscribe to a basic level of recycling service that includes collection, self-hauling, or other arrangements for the pickup of the recyclable materials.

(2) Subscribe to a recycling service that may include mixed waste processing that yields diversion results comparable to source separation.”

Some General Differences Between Source Separation/Clean MRFs and MWPF

Source Separation/Clean MRF

Recyclables are separated from waste, are cleaner, are usually higher-value materials, and can be recovered at a high rate and high quality

Process can be very efficient in recovering recyclables

Dependent on generator to separate correctly and completely and not contaminate, great opportunity for public education

No guarantee that all recyclables go to recycler/MRF – can have recyclables in black bin that go straight to disposal

MWPF

Recyclables are not separated and may be contaminated and may therefore be recovered at a lower rate and may be lower quality

Process may tend to be less efficient since more materials must be processed to recover recyclables

No dependence on generator behavior, little public education needed

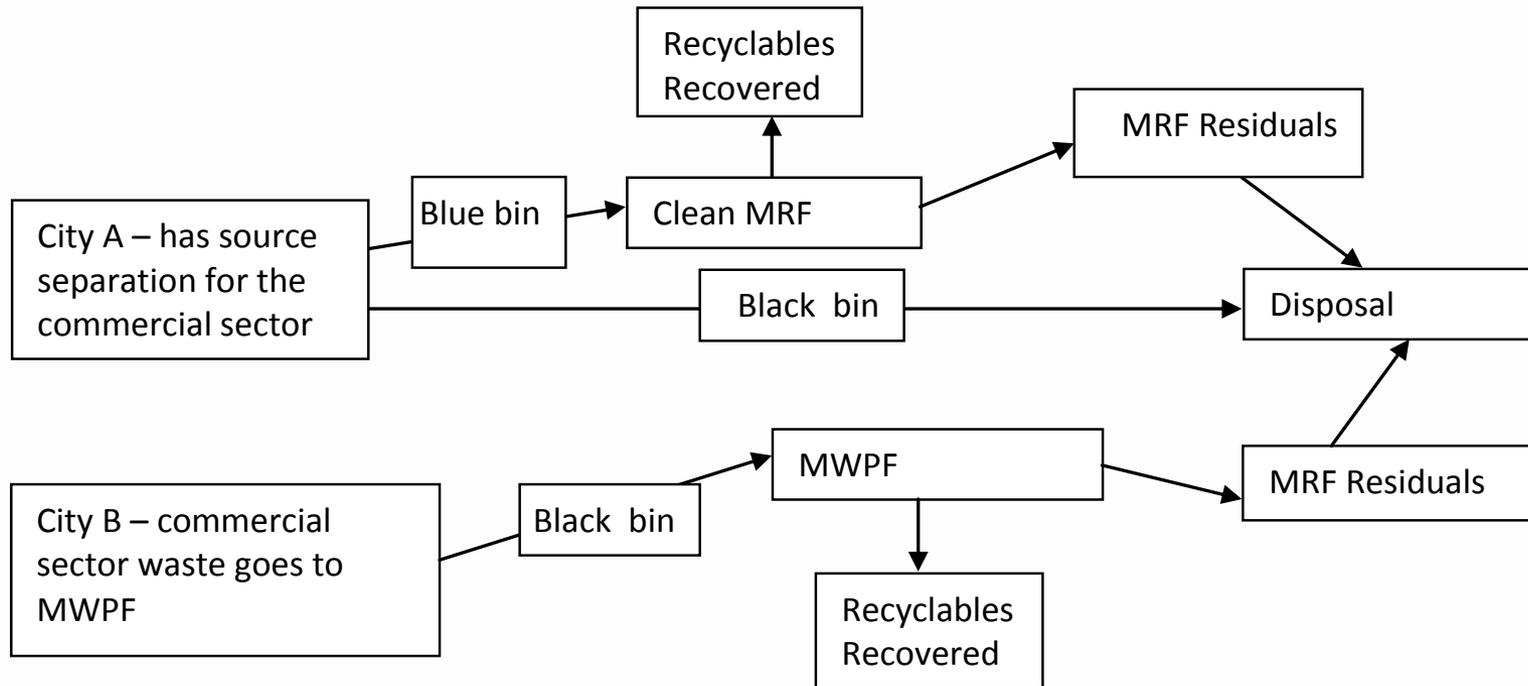
Can change what is recovered from the sorting lines rapidly to respond to market changes

Some Similarities Between Source Separation/Clean MRFs and MWPF

- Both systems have pros and cons
- Each can be the most appropriate system depending on circumstances
- Each system has a range of effectiveness – there can be inefficient clean MRFs as well as highly efficient MWPFs

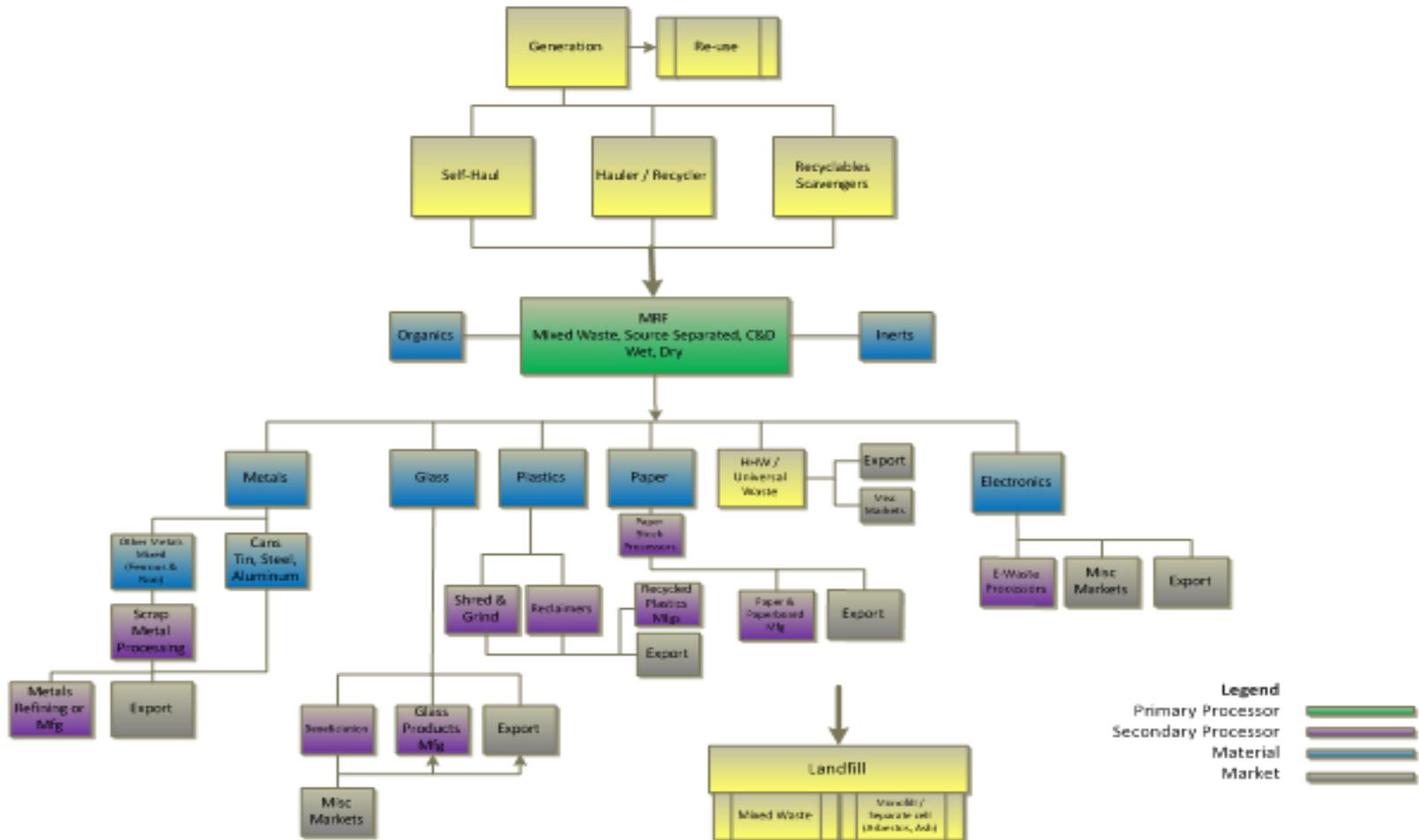
Comparing Systems – where to draw the boundaries?

2 simplified systems:



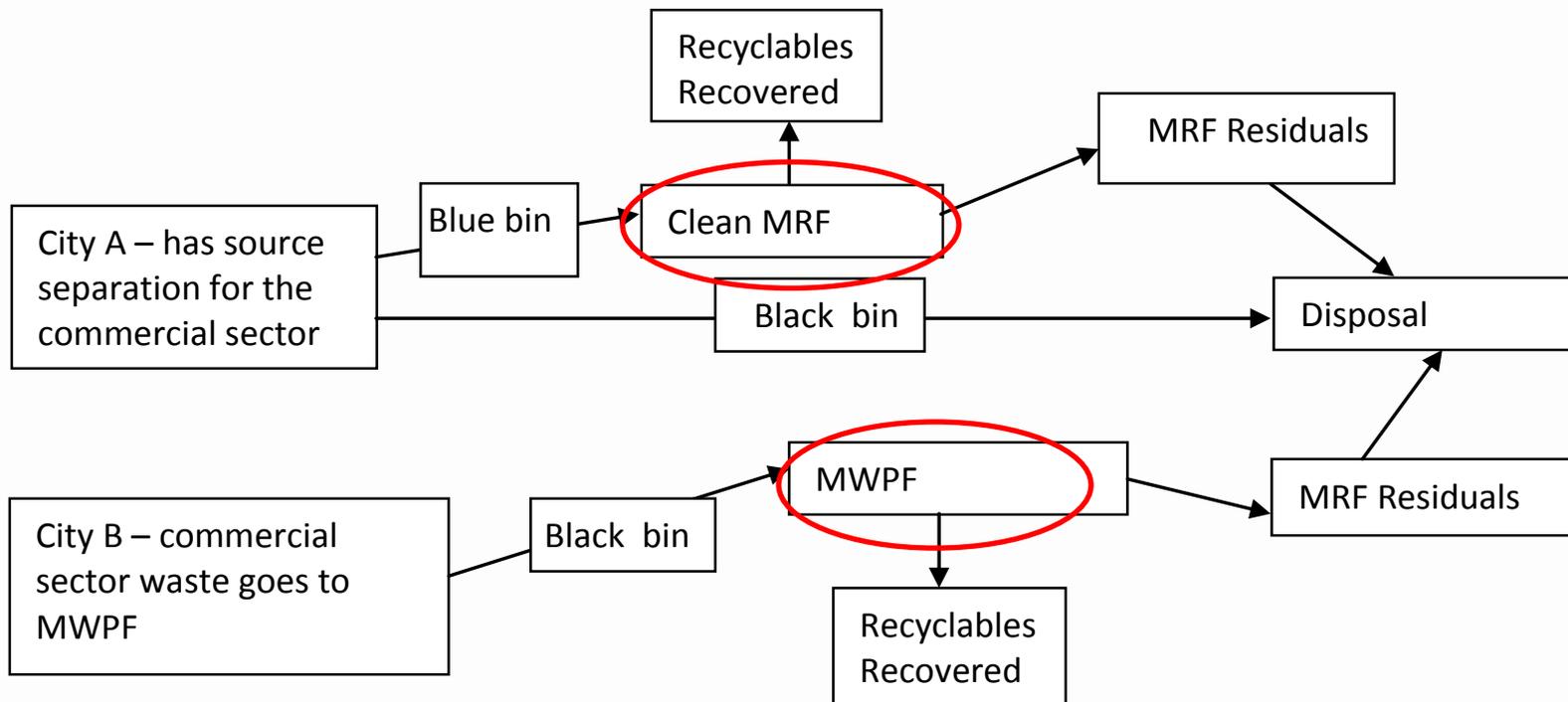
The System is Complex

MRF Materials Flow



Comparing Systems – where to draw the boundaries? (cont.)

Can we just look at facilities alone?



Mixed waste processing feedstock comparable to source separated feedstock -

We can all agree:

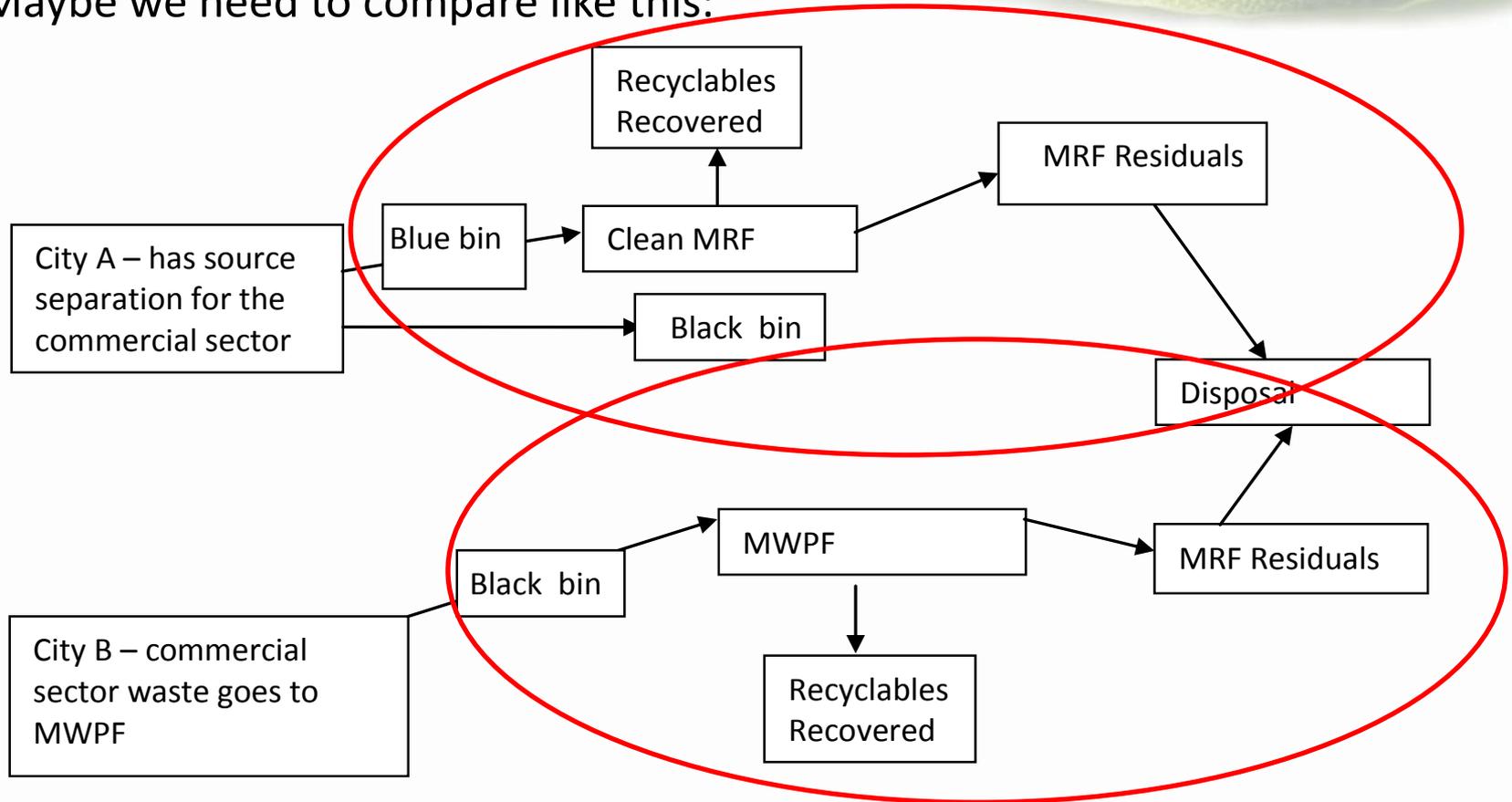


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Comparing Systems – where to draw the boundaries? (cont.)

Maybe we need to compare like this:



Further Issues

- How do we Measure and Enforce?
- How do we treat existing MWPFs?
- How do we treat rurals?

Famous Quotes:

No one said this was going to be easy.

–Brian Larimore, September 6, 2012



Some Options for Setting Standards for “MWP comparable to source separation”

Four offered here for discussion (Topic 1)

- Option A –Specify amounts of certain materials allowed in residuals from MWPF
- Option B - Require use of best management practices
- Option C - Specify recovery rate for MWPF
- Option D - Compare recovery results on a more system-wide basis

Others may also be considered

Topic 1, Option A – Specify Maximum Amounts of Designated Materials Allowed in Residuals

- Need to develop list of designated materials
- List may need to change over time
- Need to set standard for maximum amounts allowed
- Residuals would need to be characterized
- Example – Alameda County ordinance for “High Diversion Mixed Waste Processing Facilities” allows maximum of 10% of “covered materials” in residuals (unmarketable processing residuals are not included)

Topic 1, Option A – Specify Maximum Amounts of Designated Materials Allowed in Residuals - Questions

- How to choose materials and set the rate?
- Should clean MRFs be held to the same standard? (to be comparable)
- Should standards be flexible to accommodate local conditions? How flexible?
- How do facilities show they meet the standard (data collection & reporting)?

Topic 1, Option B – Require Use of Best Management Practices

- BMPs need not include recovery rates, but would include practices which lead to higher recovery rates
- Could encompass uses of equipment, processes, labor and may require upgrades
- Can have wide range of practices to allow for flexibility (i.e., choose from a menu)
- Need to develop list of BMPs and standards for each with help from industry, local govt. and other stakeholders

Topic 1, Option B – Require Use of Best Management Practices - Questions

- How would facilities demonstrate they are employing BMPs and meeting standards?
- Is a more qualitative approach adequate?
- Is some data reporting needed?
- What time frame is appropriate to implement improvements, if needed?
- Should there be a “sliding scale” to allow for age of facilities, rural setting, local contracts, etc.?

Topic 1, Option C – Specify MWPF Recovery Rate

- Specified recovery rate could be either an overall rate or include only certain materials
- For an overall rate, could report on tonnage received and tonnage recovered or disposed
- If include only certain materials, characterization data may be needed to compare the amount in the feedstock to the amount in the residual

Topic 1, Option C – Specify MWPF Recovery Rate – Illustration

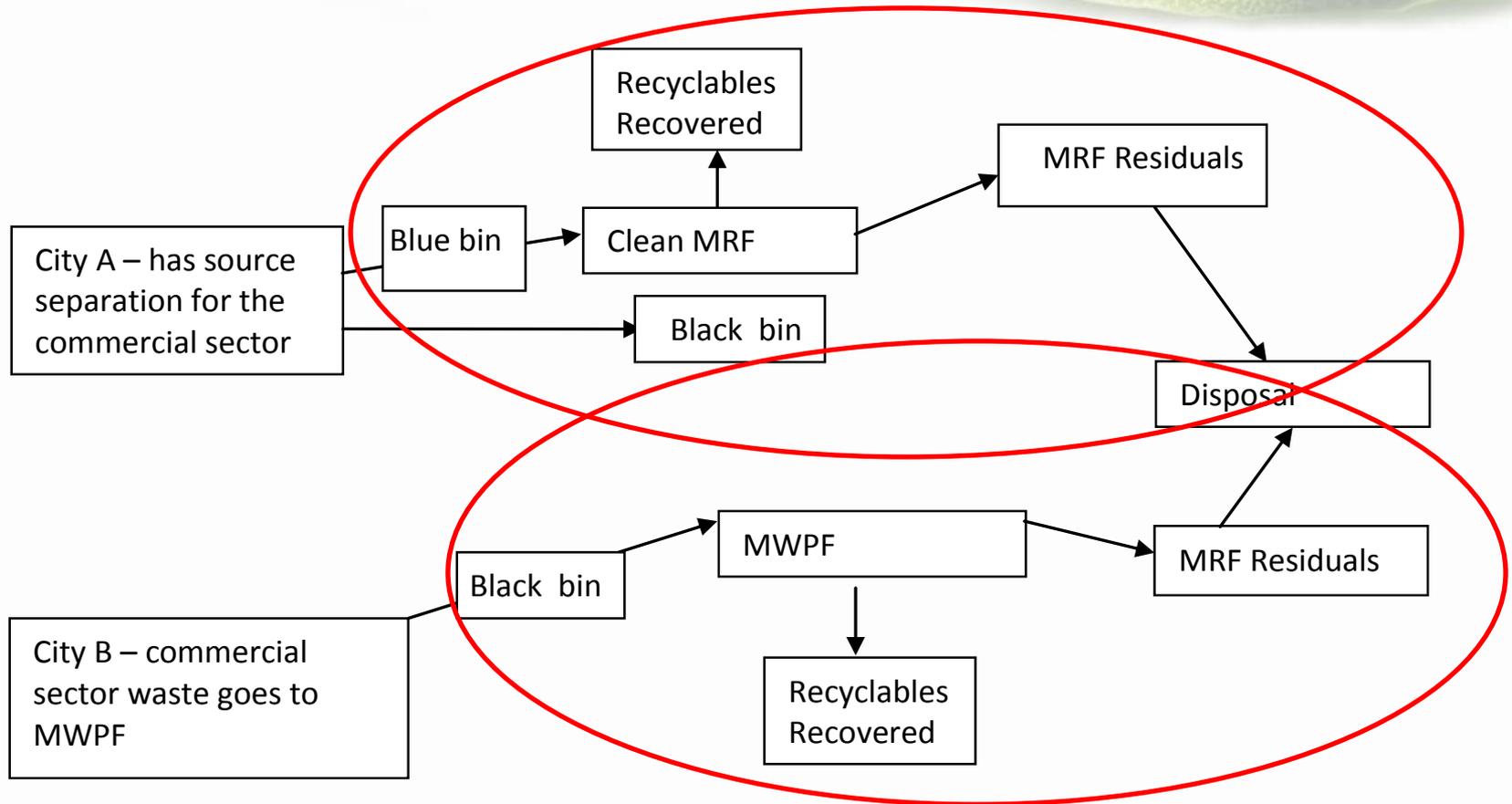
- MWPF must meet an overall recovery rate
- Rate is XX% of material received
- All materials recovered count
- Facility reports on tonnage received and tonnage sent for disposal

$$\frac{\textit{tons received} - \textit{tons sent for disposal}}{\textit{tons received}} = \text{recovery rate}$$

Topic 1, Option C – Specify Recovery Rate - Questions

- How to set the rate? What's a fair standard for MWPFs?
- If use an overall rate, should recovery count for all materials and activities, or only some?
- Should standards be flexible to accommodate local conditions? How flexible?
- How do facilities show they meet the standard (data collection & reporting)?

Topic 1, Option D - Compare Diversion Results on a System-Wide Basis



Topic 1, Option D - Compare Diversion Results on a System-Wide Basis (cont.)

One simplified approach:

Quantify materials recovered from the blue bin; quantify materials recovered from and disposed from the black bin.

Source separation system:

$$\frac{\text{blue bin recovery from MRF}}{\text{amont placed in blue bin} + \text{amont placed in black bin}} = \text{recovery}$$

MWPF system:

$$\frac{\text{black bin recovery from MRF}}{\text{amont placed in black bin}} = \text{recovery}$$

Topic 1, Option D - Compare Diversion Results on a System-Wide Basis - Questions

- Where should boundaries be set?
- Each MWPF can provide data, but what data should be used for comparison?
 - Compare to “clean MRF” standard based on statewide average data?
 - How will that data be developed?

Q&A for Topic 1

- Option A –Specify amounts of certain materials allowed in residuals from MWPF
- Option B - Require use of best management practices
- Option C - Specify recovery rate for MWPF
- Option D - Compare recovery results on a more system-wide basis

Others may also be considered

Topic 1, Option A – Specify Maximum Amounts of Designated Materials Allowed in Residuals - Questions

- How to choose materials and set the rate?
- Should clean MRFs be held to the same standard? (to be comparable)
- Should standards be flexible to accommodate local conditions? How flexible?
- How do facilities show they meet the standard (data collection & reporting)?

Topic 1, Option B – Require Use of Best Management Practices - Questions

- How would facilities demonstrate they are employing BMPs and meeting standards?
- Is a more qualitative approach adequate?
- Is some data reporting needed?
- What time frame is appropriate to implement improvements, if needed?
- Should there be a “sliding scale” to allow for age of facilities, rural setting, local contracts, etc.?

Topic 1, Option C – Specify Recovery Rate - Questions

- How to set the rate? What's a fair standard for MWPFs?
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Topic 1, Option D - Compare Diversion Results on a System-Wide Basis - Questions

- Where should boundaries be set?
- Each MWPF can provide data, but what data should be used for comparison?
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 - How will that data be developed?



Topic 2: Standards for MRF Residuals to be Used for Energy Recovery

Standards for MRF Residuals to be Used for Energy Recovery

- Residuals are a potential feedstock for energy recovery facilities
- New technology and desire to move away from landfills make use of residuals for energy recovery an attractive and viable option for some situations
- Large energy facilities require long-term commitment of resources and therefore they should use feedstock where recyclables have been removed as much as possible

New Path Forward

- Goal = A new path forward for incentivizing the use of MRF residuals for energy recovery when it is the highest and best use.
- Only allowable current statutory path of gasification is impractical and has not worked.
- Legislative attempts to address this have failed.
- Need a new meaningful and practical standard that can inform critical discussions as ARB deliberates on Cap & Trade and CEC deliberates on Renewable Energy Credits.
- New path forward would be a voluntary path for those who want to pursue it – not prescriptive on all facilities or all jurisdictions.

Standards for MRF Residuals to be Used for Energy Recovery

- How to set standard for sufficient removal of recyclables?
- Where should such a standard be enforced – feedstock supplier (MRF) or energy facility?

Some Options for Setting Standards for MRF Residuals to be Used for Energy Recovery

Two offered here for discussion (Topic 2)

- Option A – Specify amounts of designated materials allowed in residuals (see Topic 1, Option A)
- Option B – Require use of best management practices (see Topic 1, Option B)

Others may also be considered (perhaps a hybrid)

Topic 2, Option A – Specify Amounts of Designated Materials Allowed in Residuals*

- Need to develop list of designated materials
- List may need to change over time
- Need to set standard for maximum amounts allowed
- Residuals would need to be characterized
- Example – Alameda County ordinance for “High Diversion Mixed Waste Processing Facilities” allows maximum of 10% of “covered materials” (unmarketable processing residuals are not included)

*similar to Topic 1, Option A

Topic 2, Option A – Specify Maximum Amounts of Designated Materials Allowed in Residuals - Questions

- How to choose materials and set the rate?
- Should standards be flexible to accommodate local conditions? How flexible?
- How do facilities show they meet the standard (data collection & reporting)?

Topic 2, Option B – Require Use Best Management Practices*

- BMPs must be employed which ensure sufficient recyclable materials are removed from residuals
- Could be applied to aspects of the larger waste management system, not just the MRF
- BMPs need not, but could, include recovery rates

*Similar to Topic 1, Option B

Topic 2, Option B – Require Use Best Management Practices (cont.)

- Could encompass uses of equipment, processes, labor and may require upgrades
- Could encompass upgrade of diversion programs
- Facilities (or jurisdictions?) would need to demonstrate how they meet/implement BMPs
- Can have wide range of practices to allow for flexibility
- Could include some periodic reporting of recovery data

Topic 2, Option B – Require Use Best Management Practices - Questions

- How would “best” practices be defined?
- How would meeting the standards be demonstrated?
- Who will inspect and enforce the standards?
- If practices go beyond the MRF, who’s responsible for meeting them?
- Should some data reporting be required?

Q&A for Topic 2

- Option A – Specify amounts of designated materials allowed in residuals (see Option 1 for Topic 1)
- Option B – Require use of best management practices (see Option 2 for Topic 1)
- Others

Topic 2, Option A – Specify Maximum Amounts of Designated Materials Allowed in Residuals - Questions

- How to choose materials and set the rate?
- Should standards be flexible to accommodate local conditions? How flexible?
- How do facilities show they meet the standard (data collection & reporting)?

Topic 2, Option B – Require Use Best Management Practices - Questions

- How would “best” practices be defined?
- How would meeting the standards be demonstrated?
- Who will inspect and enforce the standards?
- If practices go beyond the MRF, who’s responsible for meeting them?
- Should some data reporting be required?

Next Steps

- More Workshops
- Timeline?
- Website
- Submit comments to
MRFStandards@CalRecycle.ca.gov

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