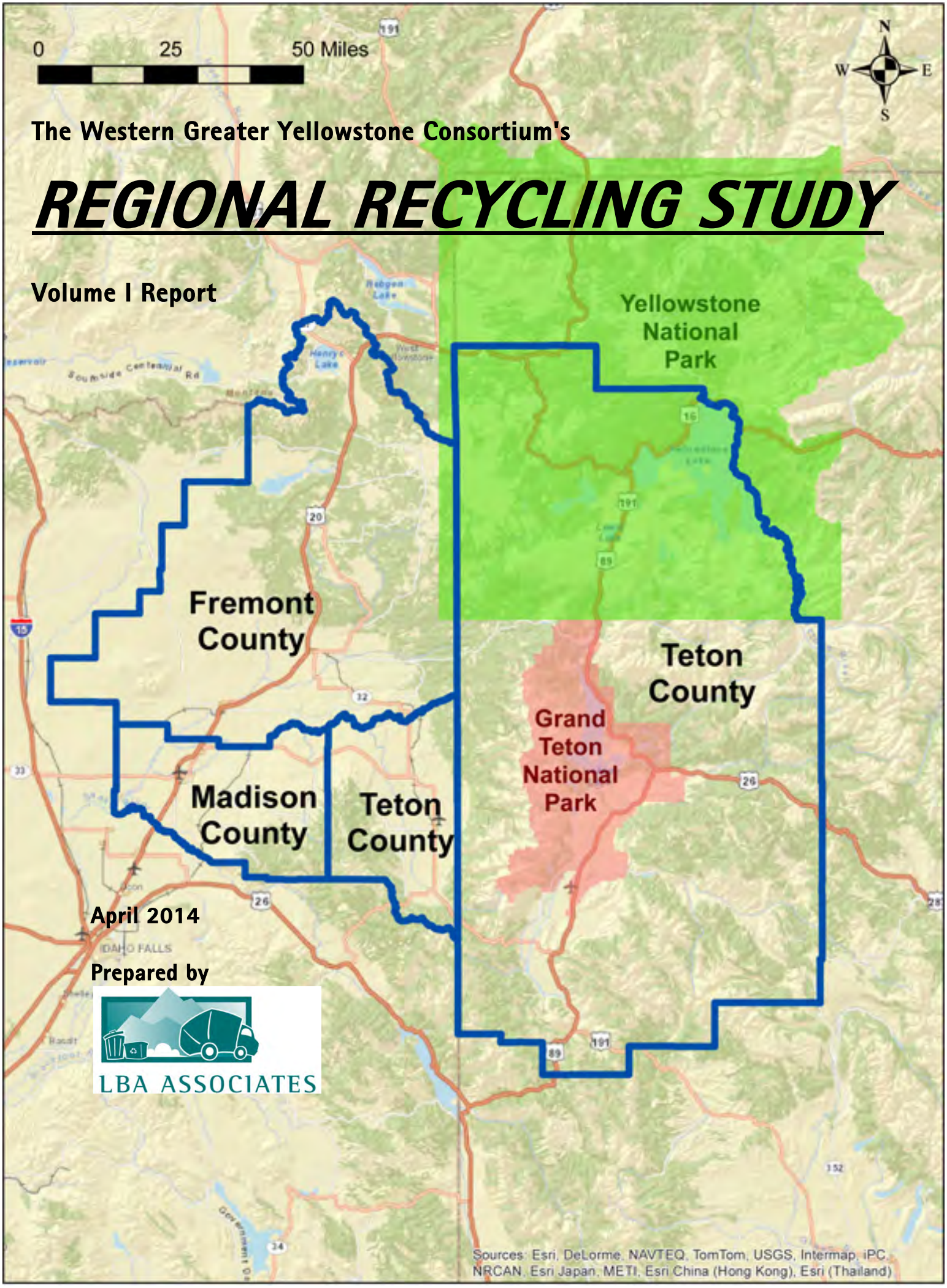

The Western Greater Yellowstone Consortium's

REGIONAL RECYCLING STUDY

Volume I Report

April 2014

Prepared by

LBA ASSOCIATES

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EXECUTIVE SUMMARY

The Western Greater Yellowstone Consortium (WGYC) has undertaken a regional recycling study to address the economic gap of $4.8M/year generated by focusing on managing *waste* - instead of managing *resources* in the waste. This loss, which represents both the cost of landfilling recyclables and the loss of market revenues from those materials, is a missed opportunity for the four-county study area. This report presents the findings of a feasibility-level study of regional recycling solutions.

Existing programs within the boundaries of Fremont County, Madison County and Teton County, Idaho and Teton County, Wyoming are based on public drop-site collection with sporadic private curbside service. Despite high disposal fees ($60 to $110/ton), recycling levels are generally less than 10% of the waste stream (recovery of other materials such as organics increase the overall MSW diversion level, however, especially in Teton, ID and Teton, WY). Diversion programs are decentralized, with collection and marketing efforts repeated in each county (sometimes in each municipality). Some local policies address special wastes, burning trash and illegal dumping - but most are inconsistently enforced. There are few material markets in the vicinity.

Utilizing an all-inclusive public process, WGYC encouraged private and non-profit companies, individuals and local governments to participate in identifying feasible strategies for increasing regional recycling in a manner that is cost-effective and accessible to all communities. During this process, it became clear that:

- A reliance on collecting source-separated materials hinders increased diversion by generators - commingling is a challenge, however, as the nearest full-scale material recovery facilities (MRFs) are more than 250 miles away
- There is an absence of policy that encourages a culture change and drives new recycling success
- Low population densities in the WGYC area may not cost-effectively support regional recycling infrastructure
- While there are many interested stakeholders, leadership does not yet exist to champion and lead new regional solutions

Regional MRF Operation

To address these challenges, the development of a new regional MRF was considered to provide the service area with the ability to process traditional recyclables (traditional paper and container materials) that are collected in a single- or dual-stream (i.e., all materials in one or two containers, respectively). Three alternatives were evaluated to evaluate variability in both service area size and the level of commingling:

- *Single-Stream MRF for WGYC Counties Only*
- *Single-Stream MRF for an Expanded Service Area (serving the WGYC counties plus five additional Idaho counties (Bannock, Bingham, Bonneville, Clark and Jefferson)*
- *Dual-Stream MRF for WGYC Counties Only*

The potential benefits of developing regional MRF infrastructure include:

- Increasing diversion by increasing convenience for residential and business consumers

- Reducing landfill tip fees paid by haulers (and therefore residential and business waste generators)
- Improving the efficiency of curbside collections (while still accepting source-separated materials)
- Aggregating regional tons to achieve lower unit processing and market haul costs

Environmental Benefits - Estimated diversion levels associated with the MRF alternatives are summarized in Table ES-1. These estimates, which project notable increases over existing recycling, are based on observed diversion levels achieved by other communities who have moved to commingled collection. However, success rates are extremely difficult to predict prior to actual program implementation and can depend heavily on the additional infrastructure and policy changes made in tandem with new MRF processing capability (suggested policy considerations are discussed below).

Table ES-1 also describes the estimated greenhouse gas (GHG) emission reductions associated with recycling (instead of landfilling) waste materials. These tons are approximately equal to the emissions generated by 10,000 to 36,000 vehicles.

Table ES-1 SUMMARY OF MRF DIVERSION LEVELS (rounded to nearest 100 tons, % diversion by weight)

DIVERSION LEVELS	SINGLE-STREAM MRF		DUAL-STREAM MRF
	WGYC Counties	Expanded Service Area[a]	WGYC Counties
STATUS QUO (actual tons – no MRF operations)			
Tons Diverted (2012)	5,300	NA	5,300
Diversion from Recycling Only[b]	Approx 5%	NA	Approx 5%
NEW MRF OPERATIONS (projected tons)			
Processing Capacity (tons/year)			
2015[b]	13,400	42,600	11,500
2030[b]	30,000	90,400	25,000
Diversion from Recycling Only[c]			
2015	12%	11%	11%
2030	21%	21%	18%
GREENHOUSE GAS EMISSION REDCUTIONS (metric tons of carbon dioxide equivalent/year)[d]			
2015	61,000	196,000	53,000
2030	133,000	394,000	111,000

[a] Existing diversion progress not measured outside of the WGYC area.
[b] Values represent diversion of 30-35% of the total MRF recyclables in the waste stream in 2015, and 50-60% in 2030.
[c] Diversion of other materials (organics, household hazardous waste, electronics, etc.) will increase these values.
[d] Based on ICLEI Recycling and Composting Emissions Protocol (Version 1.0, July 2013).

Economic Impacts - Capital and operating costs for the MRF alternatives (shown in Table ES-2) illustrate the economic benefit of the expanded service area. The 2015 WGYC study area population of 94,000 was modeled against the expanded service area of 366,000 people.

Given the preliminary nature of this study, the cost estimates are necessarily conservative. These estimates may improve depending on actual commingled versus source-separated tons, how debt service is handled, contingency factors and other assumptions (spreadsheet-based models, developed for WGYC's use in re-evaluating these assumptions in the future, are included in Appendices H through J).

Table ES-2 SUMMARY OF MRF COSTS[a] (includes glass, rounded to nearest $1,000)

COST/REVENUE	SINGLE-STREAM MRF		DUAL-STREAM MRF
	WGYC Counties	Expanded Study Area	WGYC Counties
Capital Cost[b]	$10,895,000 ($363/ton)	$16,382,000 ($181/ton)	$10,664,000 ($427/ton)
Net Annual			
Operating Costs	$1,031,000	$2,288,000	$934,000
Debt Service	$1,022,000	$1,474,00	$999,000
Material Revenues	$1,075,000 to $1,508,000	$3,483,000 to $4,859,000	$947,000 to $1,329,000
Net Annual[c]	-$978,000 to -$545,000 (-$73 to -$41/ton)	-$279,000 to $1,097,000 (-$7 to $26)	-$986,000 to -$604,000 (-$86 to -$53)

[a] Excludes collection costs - includes 30% contingency for capital and processing equipment.
[b] Per-ton capital costs based on 2030 tons, per-ton annual costs based on 2015 tons.
[c] Excluding glass from the single-stream/expanded area alternative reduced capital costs to $15,571,000 and net annual costs reduced to between -$176,000 and $1,200,000.

To fully compare the status quo to potential future development of new MRF infrastructure, the ability to reduce landfill tip fee payments by reducing trash generation through recycling is another important metric. Given the relatively high fees charged for commercial waste loads collected in most of the WGYC area, these savings (tabulated below) are expected to be significant. The combination of the potential material revenue earnings (Table ES-2) and landfill savings (Table ES-3) estimated for the WGYC alternatives indicates the ability to address half of the existing $4.8 economic gap described above.

Table ES-3 Estimated Savings from Avoided Landfill Tip Fees[a] (rounded to nearest $1,000)

YEAR	SINGLE-STREAM MRF		DUAL-STREAM MRF
	WGYC Counties	Expanded Study Area	WGYC Counties
2015	$1,005,000	$3,195,000	$863,000
2030	$2,250,000	$6,780,000	$1,875,000

[a] Based on a WGYC average tip fee of $75/ton (represents maximum savings which will likely vary at each landfill).

One final economic benefit includes the ability to create jobs to operate a new regional MRF, and to haul recyclables to end markets. As shown in Table ES-4, as many as 46 new full-time jobs may be created depending on the alternative ultimately implemented.

Table ES-4 Job Creation Potential in 2015 (in full-time equivalents, rounded to nearest FTE)

JOBS	SINGLE-STREAM MRF		DUAL-STREAM MRF
	WGYC Counties	Expanded Study Area	WGYC Counties
MRF Processing	15	37	13
Hauling Materials to Market	3	9	3
TOTAL	*18*	*46*	*16*

Regional Recycling District Formation

A regional recycling district under State of Idaho statute can develop infrastructure, buy and sell property, raise funds and incur debt, establish standards and regulation, and hire staff. Benefits of the organization would include:

- Providing leadership
- Helping generate the capital, political support and partnerships necessary to develop a MRF that meets the needs of the communities
- Generating enough recyclable tons to support an economically-sustainable facility
- Consolidating operational, policy development and/or educational activities to increase efficiencies and consistency throughout the region

Policy development is one of the most valuable responsibilities the district can undertake. It is expected to provide governments with more control over waste generated in their jurisdictions and create incentives or requirements for diversion that will create benefits at the regional level. Pay-as-you-throw (or variable rate) trash pricing, banning readily recyclable materials from disposal, and tackling the availability of low self-hauling fees (possibly through universal collection requirements) are three policy options capable of supporting an effective culture change over time.

Overall Implementation

There are several important next steps necessary for WGYC's pursuit of a regional recycling facility:

1. ***Preliminary Decision-Making and Research*** - Needed decisions include determining the design service area for the MRF and setting appropriate diversion and cost/revenue goals (a goal of 20% diversion from recycling is recommended). Research should entail collection of tonnage and composition data not available for this study and verification of cost assumptions. Also important to the feasibility of a regional MRF will be an assessment of "upstream" impacts to local governments related to changes in collection, transfer and revenue generation from recyclables.
2. ***Encourage Public/Private Partnerships*** - Regardless of whether the MRF is publicly or privately operated, public ownership will require;
    - Consideration of an organizational structure to support the MRF and foster relationships with other sectors

- Final MRF design
- Determining funding and revenue-sharing strategies
- Assisting/encouraging district members to implement local waste diversion policy
- Facilitating a region-wide education and outreach program
- Procuring an operating contractor (for private operation)

While public ownership has certain waste stream control and funding advantages, the private sector may provide industry expertise, equipment and marketing relationships unavailable to governments. It is also possible that the private sector will develop a MRF without the direct involvement of public agencies - data accumulated in this study (and confirmed with future research) will be an important catalyst for this approach.

3. ***Evaluate Other Waste Diversion Strategies*** - The regional diversion of organics, construction/demolition and agricultural materials has the potential to notably increase the levels listed in Table ES-1.

Conclusions

If decentralized, voluntary recycling programs with few incentives or mandates were all it took to build and operate new infrastructure, southeastern Idaho would already be home to facilities providing full-scale processing of recyclables, organics, hazardous waste, etc. In order for local governments to leverage the region's $4.8M/year economic gap into a driver for recycling, there are several key steps they must undertake:

- Collaborate broadly to make recycling more of a priority and to support regional infrastructure - realizing that the larger the service area, the better economics the MRF will have
- Work together to make real program and policy changes - without effective policy, there is little or no likelihood that a regional MRF will have sustainable economics
- Move towards a regional, resource-based economy where recycling plays an integral role in the overall sustainability of the region

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TABLE OF CONTENTS

LIST OF FIGURES and TABLES

VOLUME II TABLE OF CONTENTS

LIST OF ABBREVIATIONS

BYU	Brigham Young University
C&D	Construction and demolition debris
DOC	Drop-site recycling center
ES	Executive summary
E-WASTE	Electronic waste
FTE	Full-time equivalent
GTNP	Grand Teton National Park
GHG	Greenhouse gas
HDPE	High-density polyethylene
HH	Household
HHW	Household hazardous waste
ICLEI	International Council for Local Environmental Initiatives
ID	Idaho
JPA	Joint powers authority
K	Thousand
LBA	LBA Associates, Inc.
LBS	Pounds
M	Million
MRF	Materials recovery facility
MSW	Municipal solid waste
MT	Montana
$MTCO_2E$	Metric tons of carbon dioxide equivalent
PAYT	Pay-as-you-throw
PET	Polyethylene terephthalate
PPCD	Pounds per capita-day
SF	Square feet
SISWD	Southern Idaho's Solid Waste District
UP	Union Pacific
US	United States
USEPA	United States Environmental Protection Agency
WGYC	Western Greater Yellowstone Consortium

WTE	Waste-to-energy
WY	Wyoming
YNP	Yellowstone National Park

Section 1
INTRODUCTION

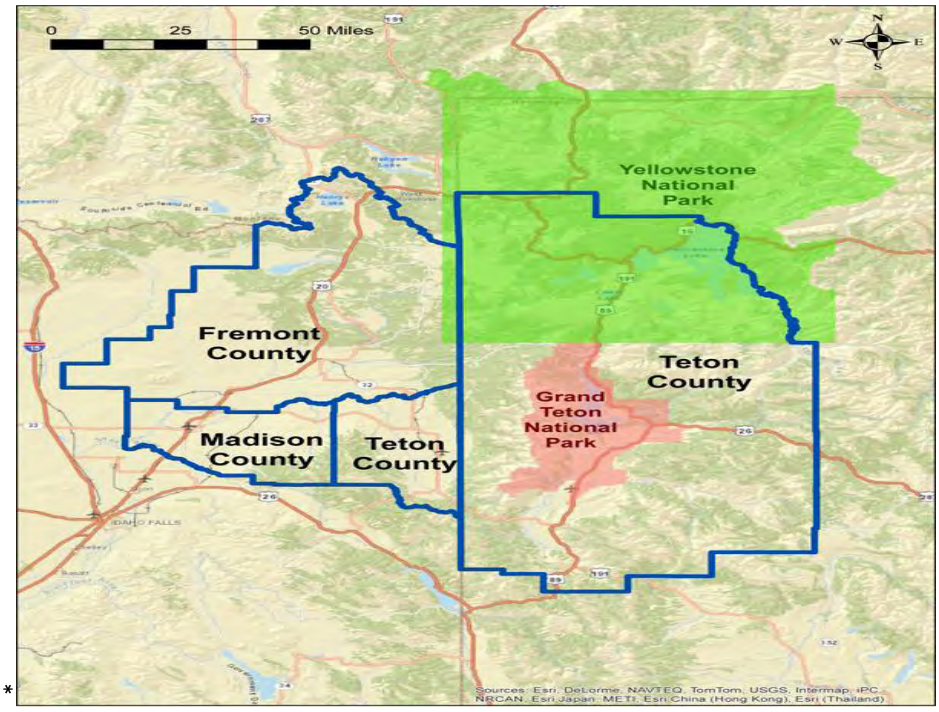
The Western Greater Yellowstone Consortium (WGYC) undertook a Regional Recycling Study in 2013 as part of its four-county Regional Plan for Sustainable Development. This plan has been made possible through a grant from the Partnership for Sustainable Communities Regional Planning Grant program and will eventually integrate with other work addressing housing, land use and development, transportation, infrastructure and other key indicators in support of a sustainable economy for the WGYC area.

The WGYC region is shown in Figure 1-1. WGYC members span both Idaho and Wyoming, and include:

- Counties - Teton, Madison and Fremont, ID; Teton, WY
- Cities - Ashton, Driggs, Island Park, Rexburg, St. Anthony and Victor, ID; Jackson, WY
- Non-profit organization - Yellowstone Business Partnership
- State and federal agencies - U.S. Bureau of Land Management, U.S. Forest Service and Idaho Department of State Lands
- Funding agency - U.S. Department of Housing and Urban Development

WGYC contracted with LBA Associates, Inc. (LBA) of Denver, Colorado to assist in the completion of this project. The LBA Team has led the public engagement process and worked with WGYC to meet the objectives described below.

Figure 1-1 WGYC Region



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1.1 Study Goal and Objectives

The goal of the study is to evaluate ways to increase waste diversion throughout the WGYC region with program, policy and/or infrastructure improvements that are cost-effective and accessible to all communities. The study represents a preliminary, feasibility-level study of a short-list of environmentally and economically practical alternatives to meet this goal.

An important objective of the study is to engage WGYC stakeholders in an open process that identifies waste diversion improvements by:

- Reviewing existing waste management practices with WGYC members and stakeholders to define waste diversion obstacles
- Evaluating the viability and implementation needs of high-priority recycling system improvements deemed to have the greatest potential for increasing diversion across the region

1.2 Study Components

This study includes four key steps to bridge the gap from discrete county programs with varying levels of programming, to a centralized, regional strategy that prioritizes waste diversion.

1. ***Develop an All-Inclusive Public Process to Actively Involve Stakeholders*** (utilized throughout the study to complete most study components) - LBA has worked with WGYC to initiate a cross-boundary stakeholder process (see Appendix A for a complete list of Regional Recycling Study stakeholders). A Cross-Boundary Coordination and Outreach Plan was generated to guide the public process (see Appendix B). Stakeholders have been engaged over the course of the study through face-to-face interviews, group meetings, teleconferences, email and phone communications, and WGYC website postings (Appendix C includes a log of stakeholder interaction). *Despite the all-inclusive nature of this study, the perspective of infrastructure, organization and policy development is that of the public sector. Deviation to reflect private sector involvement is noted where appropriate.*
2. ***Identify Barriers to Waste Diversion and Match Those Barriers with Feasible Solutions*** (described in Section 2.0) - Conducted by the stakeholders with assistance from LBA, this work resulted in a long list of barriers and obstacles, coupled with potential diversion solutions. This list was subsequently ranked to select three priority system alternatives for detailed feasibility evaluation.
3. ***Evaluate the Feasibility Assessment of Prioritized Alternatives*** (described in Sections 3.0 and 4.0) - These evaluations have been completed by LBA for stakeholder review and approval. The evaluations included:
    - Materials quantity projections - around which recycling infrastructure could be designed
    - Recyclables market research - to confirm processing requirements and revenue potential
    - Development of infrastructure design basis and detailed cost evaluation (for three material recovery facility, or MRF, options) - to produce user-friendly models that WGYC member can use to explore "what if" variations in the future

- Assessment of organizational models - for on-going stakeholder collaboration in support of new regional infrastructure

1.3 Study Background

The responsibility for solid waste management in both Idaho and Wyoming (especially waste diversion components) is for the most part left to local governments. While both states regulate landfill disposal, neither state has significant rule-making for recycling programs or facilities, and neither has full-time staff dedicated to waste diversion.

1.3.1 WGYC Counties

Counties have ultimate responsibility for landfill disposal in Idaho. Every county in the WGYC operates its own landfill or transfer station to an out-of-county landfill (Fremont County currently operates two landfills although the St. Anthony site will be transitioned to a transfer station in the near future). Table 1-1 includes a brief summary of current waste diversion waste practices. Appendix D includes working diagrams of programs within each WGYC county developed during stakeholder meetings early in the study.

Table 1-1 Existing Waste Diversion in WGYC Study Area

COUNTY	RECYCLING	OTHER DIVERSION	SOLID WASTE FEES
Teton, ID	* Fee-based residential/ commercial curbside by private hauler * Self-haul to County DOC (some self-haul to Teton, WY) * County recycling DOC and baling facility	* County: glass, wood, manure, animal mortalities * Teton Valley Community Recycling (non-profit) education and outreach	* MSW tip fees - $66/ton, $105/ton mixed load sort fee, self-haul $5/load <150 lbs * County annual waste fees - $105 residential, $0.15/square foot commercial
Madison, ID	* Residential/commercial curbside (single-stream) and drop-site by BYU in Rexburg (no extra cost) * Rexburg & County DOCs * BYU recycling DOCs, limited material processing	* County wood, animal mortality diversion	* Rexburg flat trash fees * MSW tip fees - $60/ton, self-haul $1/bag * County annual waste fees - $25/HH, $0 commercial
Fremont, ID	* Self-haul only * County/City recycling DOCs	* None reported	* MSW tip fees - $0 < 2yards * County annual waste fees - $110/ household, commercial varies
Teton, WY	* Fee-based curbside by private haulers and self-haul * County recycling DOCs and baling facility * Resort hauls own recyclables * National Parks contract recyclables hauling	* County contract yard waste compost, C&D diversion * County HHW/e-waste facility * Parks organics DOCs	* MSW tip fees - $110/ton, $200/ton mixed load sort fee

See List of Abbreviations (page vii) for abbreviations.

1.3.2 Other Counties

Early in the study, WGYC stakeholders acknowledged the potential benefit of expanding the service area to increase the tons diverted and economize future improvements. To that end, five additional Idaho counties have been considered for possible inclusion in a regional effort including Bannock and Bonneville to the south because of their population size, and the others because of their proximity and/or past history with the WGYC counties on solid waste issues[1]:

- Bannock County operates a transfer station, municipal solid waste (MSW)/construction and demolition (C&D) landfills, and recycling drop-off centers (DOC) - both Pocatello and Chubbock have curbside single-stream recycling programs
- Bingham County operates a transfer station (including both recycling DOC and composting operations) and two C&D landfills - neither Blackfoot or Shelley have recycling programs
- Bonneville County operates a regional transfer station, MSW/C&D landfills and recycling DOC - both Idaho Falls and Ammon have curbside single-stream recycling programs
- Clark County operates no landfill, transfer or recycling programs - waste is hauled directly to the Jefferson County landfill
- Jefferson County, ID operates a regional MSW landfill and C&D pit

Future expansion of the WGYC region could also include:

- Yellowstone National Park (YNP) as there is heavy access to and from YNP through West Yellowstone and northern Fremont County - currently, however, the parks' recyclables and organics have good management systems in place with private recyclers and a public compost operation in Montana (Grand Teton National Park, or GTNP, waste is managed by Teton County, WY)
- Additional southeastern counties in Idaho - including Bear Lake, Caribou, Franklin, Oneida and Power Counties (depending on their proximity to other facilities in Wyoming, Utah and Colorado in the future)

[1] It is noted that none of these counties have committed their involvement in this study or in the future implementation of study recommendations. Representatives of these counties have been included as stakeholders in the public participation process, however (see Appendix A).

Section 2
WASTE DIVERSION BARRIERS and POTENTIAL SOLUTIONS

The purpose of this study component is to identify potential future improvements (or alternatives) that would break down existing waste diversion barriers and support regional system solutions.

2.1 Process

This work was completed by project stakeholders during both site visits and teleconference calls. It consisted of two distinct steps:

- Identify waste diversion barriers
- Develop matching solutions and prioritize alternatives for detailed evaluation

2.2 Results

2.2.1 Existing Waste Diversion Barriers

The stakeholders identified numerous barriers and challenges specific to both their individual counties and the region. The key issues identified by stakeholders and the LBA Team generally fall into the following categories:

1. ***Status Quo Supports Significant Economic Loss –*** If both the cost of landfill disposal and lost revenues associated with recyclables currently discarded are counted, the economic loss to the four WGYC counties alone is $4.8M every year[2]. Landfill tip fees charged by Madison, ID; Teton, ID; and Teton, WY significantly exceed the national average and should be an economic driver for waste diversion[3].
2. ***No Regional Leadership for Waste Diversion –*** The low population density in each county results in low quantities of recyclables, which increases both curbside collection and processing costs. Multi-county collaboration is critical to economic sustainability. However, no regional champion(s) or organization in the region has taken responsibility for waste diversion. Instead, recycling occurs in a very decentralized system with every government program conducting its own drop-site collection, processing, marketing, policy-making, education and outreach.
3. ***Lack of Local Government Control*** - Where curbside collection is available (mostly for trash), it is provided primarily by private haulers and largely unmanaged through ordinance or contract. As a result, governments have little or no control over collection frequency, pricing or diversion incentives. There are also few requirements for reporting subscription levels, tons collected or diversion rates. Without some level of governmental controls, the ability to make sound waste management decisions or to support a regional MRF will be difficult.

[2] Based on landfill tip fees in Table 1-1, landfill tons in Table 3-1, assumed recyclables composition of 35% (see Appendix F) and average recyclables revenue of $100/ton (see Appendix H through J or L, POTENTIAL REVENUE SUMMARY worksheet).
[3] Average U.S. landfill tip fee was $45/ton in 2012 (see www.wastebusinessjournal.com/news/wbj20121003A.htm).

4. ***Lack of Policies to Encourage Diversion*** - There are no variable trash pricing or mandatory collection requirements to create financial incentives for diversion. Self-haul fees for trash are relatively low (if not non-existent) and annual waste fees are flat payments regardless of tons discarded. There are a few special waste disposal bans and illegal dumping/burn barrel rules, but they are inconsistently enforced[4].
5. ***Reliance on Drop-Site Collection for Recyclables*** - Drop-site recycling requires individuals and businesses to source-separate materials and haul them to collection locations. Source-separation and drop-site collection makes recycling significantly less convenient for generators to deal with - as a result, they do less of it.
6. ***Distant Material Markets*** - There are limited intermediate processors and end-markets in Wyoming or Idaho, requiring most recyclables to be hauled long distances. While both road and rail routes are strong in southeastern Idaho, the small quantities of recyclables generated by multiple, decentralized programs hinders efficient hauling and increases costs.
7. ***Lack of Data*** - Most counties have limited information describing program participation, quantities, costs or revenues, and there is no region-specific waste composition data. As a result, projections for future diversion facilities are largely based on assumptions and the ability to evaluate study results against current program metrics is challenging.

2.2.2 Future Diversion Alternatives

Based on the waste diversion barriers identified early in the project, stakeholders have identified a long list of potential solutions. These alternatives are listed in Table 2-1 (next page).

2.2.3 Prioritizing of Alternatives for Further Study

To assist the WGYC stakeholders in prioritizing the Table 2-1 alternatives, LBA has conducted a preliminary ranking by qualitatively applying the following criteria to each alternative:

- Environmental benefits - tons diverted and greenhouse gas (GHG) emission reductions
- Economic benefits - capital/operating costs for local governments, avoided landfill tip fees for customers, job creation, business partnership opportunities
- Social benefits - perceived demand, political ease of development, accessibility and social equity

Table 2-2 (next page) lists alternatives with a mid to high ranking (Appendix E has full ranking results).

[4] Additionally, both Teton, ID and Teton, WY have elevated tip fees for unsorted loads delivered to their transfer stations.

Table 2-1 Initial List of Recycling Alternatives

COLLECTION	TRANSFER/PROCESSING
Residential Variable Trash Pricing Universal Multi-Family Recycling Universal Commercial Recycling Dual-Stream Recyclables Collection Single-Stream Recyclables Collection Universal Residential Organics Collection Universal Commercial Organics Collection Hauler Incentives for Greater Recycling Disposal Bans - cardboard, C&D, yard waste	Processing All Plastics and Paperboard Dual-Stream Regional MRF (Hub) Single-Stream Regional MRF (Hub) Sub-Hubs - Jackson, Driggs, Bozeman, BYU/Rexburg Expand/New Local Markets - glass, plastics
CONSTRUCTION & DEMOLITION DEBRIS	**ORGANICS**
Regional Ownership/Operation of Mobile Crusher Voluntary Green Building Program Mandatory Deposit/Refund Program	Teton ID/WY Compost Facility Madison/Fremont Compost Facility Regional Food Waste Composting Facility Expand Wood Waste Markets Regional Ownership/Operation of Mobile Equipment New Diversion Options for Ag Waste and Biosolids
OTHER	**POLICY**
Expand WGYC Service Area (include other ID counties) Business Incubator for New Markets & Jobs Regional Public Outreach & Education New Markets - textiles, mattresses, bear canisters Regional Hazardous Waste Facility BYU Dormitory Recycling	Burn Ban for MSW New Buildings Required to Have Room for Recycling Tip Fees More Visible to Users New Self-Haul Tip Fees to Encourage Curbside Collection Increased Tip Fees for Mixed Waste Loads Refunded Trash Fees for Users Who Recycle Enforcement of Illegal Dumping, Other Policies

Table 2-2 Alternatives with Mid to High Ranking

ALTERNATIVE	DESCRIPTION/COMMENTS
Universal Commercial Recycling	Provide curbside (single-stream) recycling services to all trash customers
Single-Stream Recyclables Collection	Most collection currently source-separated curbside or drop-site
Processing All Plastics, Paperboard	Requires sustainable markets (in question given current global conditions)
Dual-Stream Regional Materials Recovery Facility	Centrally-located Materials Recovery Facility for commingled fiber/commingled containers
Single-Stream Regional Materials Recovery Facility	Centrally-located Materials Recovery Facility for commingled recyclables (inclusion of glass to be considered)
Jackson, WY Transfer	Commingled recyclables "sub hub" for collection, storage and transfer to new MRF
Bozeman, MT Transfer	Commingled recyclables "sub hub" for collection, storage and transfer to new MRF
Teton ID/WY Compost Facility	Multi-county compost operation for yard/wood/animal wastes initially
Madison/Fremont Compost Facility	Multi-county compost operation for yard/wood/animal wastes initially
Expanded Service Area	Including at least Bannock, Bonneville, Clark and Jefferson Counties, ID
Regional Public Outreach and Education	Including consistent messaging with uniform waste diversion "brand" for use across all counties (indirectly including policy development at municipal level)

Stakeholders have subsequently reviewed these higher-ranking alternatives and acknowledged that many waste streams could have been targeted in this study. However, recycling alternatives were finally selected for further evaluation as they were expected to be feasible "first steps" and to provide the best opportunity for a

centralized, regional approach that would have the desired ripple effect throughout each county. Alternatives ultimately selected for further analysis included four regional improvements:

- *Single-Stream MRF for WGYC Counties Only*
- *Single-Stream MRF for Expanded Service Area (serving the WGYC counties plus five additional Idaho counties (Bannock, Bingham, Bonneville, Clark and Jefferson)*
- *Dual-Stream MRF for WGYC Counties Only*
- *Regional Solid Waste Organization (to support a regional MRF)*

2.3 Observations on Alternatives Selection

MRF Alternatives

The nearest MRFs to the WGYC area are the privately owned and operated facilities noted below[5]. These MRFs are at least 250 miles from the WGYC area. These haul distances are likely to erode the revenue potential and environmental benefits of increasing diversion through commingling.

- Rexburg, ID (Brigham Young University or BYU facility) - through 2013 provided single-steam processing but currently managed source-separated materials only (mostly fiber)
- Boise, ID (this MRF is expected to be on-line by the summer of 2014) - single-stream without glass
- Meridian, ID (expected to be on-line in 2015) - single-stream without glass
- Salt Lake City, UT - single-stream without glass (will accept source-separated glass)
- Commerce City, CO (two MRFs) - single-stream with glass

The location of a MRF within or near the WGYC region may address these issues by supporting changes in local collection programs to include commingled materials, which would;

- Improve the efficiency and economics of curbside collections - while still accepting source-separated materials from programs that maintain current operations
- Increase diversion by increasing convenience
- Reduce landfill tip fees paid by residents, businesses and governments
- Generally maintain hauling costs and environmental footprints associated with transportation (hauls to the MRF location are not expected to be significantly different from current market hauls for most counties)
- Serve a large enough area to generate higher recyclable tons, making MRF operations economically attractive relative to landfill disposal (especially if the MRF can serve populations beyond the WGYC counties)

[5] A new single-stream MRF is not expected to compete with these facilities for existing recyclables as current practices involve the collection of source-separated materials marketed directly to brokers/end markets.

Section 3.0 evaluates the validity of these attributes on a regional level. Additional research efforts will be needed to assess the specific economic and environmental impacts for each local program.

Regional Solid Waste Organization

It is unknown who will own and operate the MRF, or what the specific role of local governments, non-profits and private service providers will be. However, the ability of these stakeholders to collaborate and provide waste diversion leadership, generate resources and gain efficiencies across the service area will be critical to a successful MRF operation.

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Section 3
MATERIALS RECOVERY FACILITY ANALYSIS

The purpose of this analysis is to evaluate the feasibility of a MRF operation that can process commingled recyclables collected throughout the region. Three MRF operations are evaluated in this section including Single-Stream/WGYC Counties, Single-Stream/Expanded Service Area and Dual-Stream/WGYC Counties.

3.1 Process

This analysis has been completed by LBA for the stakeholders' review and approval. It consists of several steps:

- General research to establish the design basis - this included projecting material quantities, assuming diversion levels and evaluating current market conditions to determine both processing requirements and pricing
- Assessment of economic pros and cons for each of the MRF options - including capital and operating costs, and job creation potential
- Assessment of environmental attributes for each of the MRF options - including diversion potential and greenhouse gas (GHG) emission reductions
- Consideration of other impacts relative to local programs, business development opportunities and community benefits

An over-arching effort was made throughout this process to make conservative assumptions such that economic and environmental benefits are not over-stated. Most notably, this was applied to quantity projections, cost and revenue estimations.

3.2 General Results

The general results described below summarize both a projection of future waste stream quantities and a market assessment to support the environmental and economic analyses that follow later in this section.

3.2.1 Material Quantity Projections

Existing Materials Quantities

The estimations used to determine working quantities for this study rely on information provided by WGYC stakeholders. As complete reports of solid waste quantities generated and managed were not available for any county except Teton County, WY, assumptions were applied (see Section 5.1 for recommendations for future data collection). Table 3-1 (next page) includes an estimate of current MSW and non-MSW quantities for the four WGYC counties. The table also includes an estimate for overall diversion levels (from recycling, composting, C&D diversion and special waste management), as well as diversion of traditional recyclables or "MRF recyclables" only (i.e., paper and containers).

Table 3-1 Estimate of Existing Waste Quantities and Diversion (rounded to nearest 100 tons)

METRIC	COUNTIES (estimated 2012 population[a])				TOTAL/ AVERAGE (89,200)
	TETON, ID[b,c] (10,600)	MADISON, ID[c] (42,900)	FREMONT, ID[c] (14,000)	TETON, WY[d] (21,700)	
Total Generated Tons	9,700	39,200	12,700	36,000	97,600
Diverted Tons (all diversion programs)	2,300	500	700	12,400	15,900
Diverted MRF Recyclables Only[e]	500	500	800	3,500	5,300
Landfilled Tons	7,400	38,700	12,000	23,600	81,700
Waste Generation (pounds/capita-day)	approximately 5 ppcd			12 ppcd	NA
Total Waste Diversion	approx 24%	approx 1%	approx 6%	34%	approx 16%
Waste Diversion – MRF Recyclables Only[e]	approx 5%	approx 1%	approx 6%	10%	approx 5%

[a] Population estimates based on US Census Bureau data.
[b] Includes private compost tons and margin for illegally dumped, burned waste and materials hauled out of county, etc.
[c] Quantities based on the estimated generation rate of 5 ppcd for Teton, ID.
[d] Generation rate of 12-ppcd based on historical data.
[e] MRF Recyclables refer to traditional paper and containers that would be processed at most MRFs.

Future Materials Quantities

Future solid waste quantities have been projected over a 15-year planning period for both the four-county WGYC service area and the five additional Idaho counties. These projections are based on population estimates and relative weights of each material in the waste stream. As no waste composition data is available to describe the solid waste stream in Idaho or Wyoming, the assumptions listed in Table 3-2 were used. As this composition relies heavily on measurements made in other states, the importance of conducting future seasonal waste sorts in the study areas will be important for defining actual diversion potential. As shown, approximately 35% of the total waste stream can potentially be managed as MRF recyclables.

Table 3-2 Assumed Solid Waste Composition

MATERIAL CATEGORY	ASSUMED COMPOSITION(% by weight)[a]
Paper	25% to 36%
Plastics	9% to 15%
Glass	2% to 3%
Metals	5% to 9%
Organics	24% to 32%
Other	16% to 22%
TOTAL	*100%*

[a] Based on the Wyoming Solid Waste Diversion Study (LBA Associates, 2013), USEPA's Municipal Solid Waste in the United States - 2011 Facts and Figures (May 2013) and Vermont's Waste Composition Study (DSM/MSW, 2013).

Table 3-3 summarizes projected material generation estimates for the two service areas over the planning period. Appendix F includes a detailed breakdown of these projections for materials types within each category. The recyclable materials in this table are the target of the MRF analysis that follows in this section.

Table 3-3 Projected Solid Waste Generation (tons/year, rounded to nearest 100 tons)

MATERIAL CATEGORIES	WGYC SERVICE AREA (Teton, Madison, Fremont, ID & Teton, WY)		EXPANDED SERVICEAREA (WGYC and Bannock, Bingham, Bonneville, Clark, Jefferson, ID)	
	2015	2030	2015	2030
Paper	34,800	43,600	110,700	131,300
Plastics	13,700	17,100	43,600	51,700
Glass	2,900	3,600	9,100	10,800
Metals	8,000	10,000	25,400	30,100
Organics	31,900	40,000	101,600	120,600
Other	21,700	27,100	69,000	81,800
TOTAL	*112,900*	*141,400*	*359,300*	*426,200*

3.2.2 Recyclable Material Markets

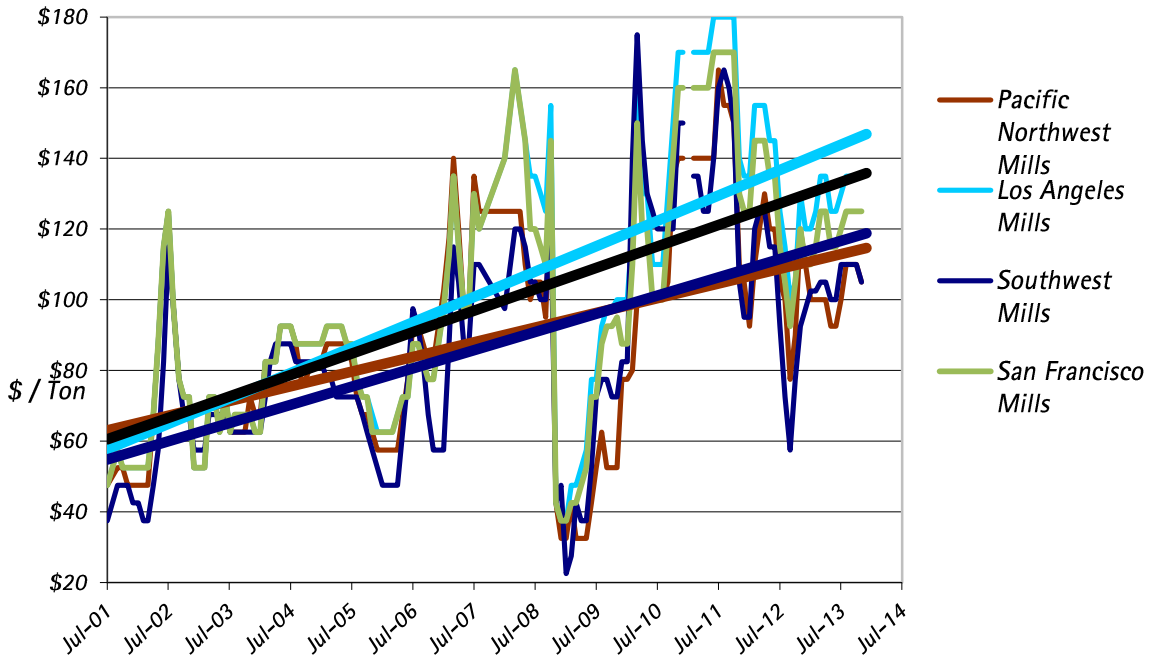
The sale of processed recyclables to secondary material markets will be critical to the economic sustainability of the MRF. Identifying specific market parameters and pricing is challenging, however, due to the extremely dynamic nature of both domestic and global marketplace (e.g., China's recent "Green Fence" policy which has reduced the level of contamination accepted in recyclables exported from the U.S.), the proprietary nature of market information, and pricing changes that occur on a monthly basis. WGYC recyclers currently use multiple types of markets that purchase recyclables, depending on which has the best overall pricing each month, including:

- Brokers - who serve multiple recyclers to provide better economics
- Intermediate processors - to further separate and prepare MRF product for end-market use
- Product manufacturers - or end markets

Although markets can vary from year to year in terms of their operating status or demand for various materials, many of the existing market players in place currently are expected to be buyers of regional recyclables in the future as well. An informal survey of current and potential markets used by WGYC stakeholders was conducted to guide the MRF analyses (see Appendix G). Key observations include:

1. ***Preference for Domestic End Markets*** - Many WGYC recyclers prefer domestic markets providing safe worker conditions, recovery versus disposal of materials and a smaller environmental footprint.
2. ***Transportation*** - Typically provided by WGYC brokers, truck hauling of recyclables predominates.
3. ***Pricing*** - WGYC recyclers tend to shop competitive bids for each load of materials. Most material buyers set pricing based partly on published indices, which are subject to dramatic fluctuations over time. Figure 3-1 (next page) illustrates historical cardboard pricing paid by mills (the trend lines shows a steady increase, which is typical of MRF recyclables except magazines and glass).

Figure 3-1 Western U.S. Cardboard Pricing Trends 2001-2013[a]



[a] Based on data collected from the Official Board Markets, Pulp and Paper World and Mill Trade Journal periodicals.

4. *Materials Accepted for MRF Processing* - Most paper and containers will be accepted for processing at the new MRF, although not all of the materials may be accepted during the initial years of operation if cost-effective markets are not yet in place (such as plastic resins #3 through #7).

3.3 Economic Results

3.3.1 MRF Facility Cost and Revenue Estimates

The basis for, and results of, a cost estimation analysis for each of three MRF alternatives is summarized below.

MRF Process Design Concept

Table 3-4 (next page) describes how materials received at the MRF are expected to be processed and moved through the facility (applies to any of the operational variations).

Table 3-4 Processing Flow and Equipment

COMMINGLED (SINGLE- OR DUAL-STREAM)	SOURCE-SEPARATED
Tipped on tipping floor by haulers	Tipped on tipping floor by haulers (except glass which is loaded directly into a roll-off)
Processed to remove big materials like cardboard (disc or trommel screen), plus manual removal of trash and rejects	
Processed to separate paper from containers in single-stream MRF (air drum separator)	
Most paper streams positively sorted at manual station - mixed paper negatively sorted	
Ferrous/non-ferrous metal sorted (by magnet, eddy current separator); plastics positively sorted at manual stations; glass negatively sorted	
Sorted materials moved to in bunkers until baled for final processing (skid or front-end loader)	Moved to bunkers until baled (skid or front-end loader)
Baled materials stored until transportation to market (forklift)	Baled materials stored until transportation to market (forklift)

Cost Modeling Assumptions

Over-arching assumptions applicable to all analyses include:

1. ***Location and Land Purchase*** - While a siting study has not been conducted, an Idaho Falls location reflects the need for access to a high-population area, possibly with rail access (site purchase estimate is based on current industrial property costs).
2. ***Cost Basis*** - The cost estimates have been based on multiple factors:
    - All costs and revenues are in 2013 dollars to provide an easy comparison of alternatives
    - Building construction costs are based on year 2030 tonnage and include design, engineering, soils evaluation, permitting, construction inspection, processing/mobile equipment installation and facility start-up
    - Processing equipment costs are based on year 2015 tonnage to best reflect initial capital requirements - however
        - Building sizing include space for all processing equipment expected to be required throughout the 2030 planning period
        - Future capital will be required for additional processing and non-processing equipment at some point in the future, depending on quantities ultimately collected
    - Facility operations costs are based on year 2015 tonnage and include processing and hauling operations only (materials marketing and public education/outreach activities are not included)
    - A contingency factor has been added to all capital and operating costs to address the preliminary nature of the estimate
        - 30% contingency on buildings and processing equipment
        - 10% contingency on non-processing equipment

- A profit margin (such as that included by a private sector owner or operator) has not been added to these estimates

3. ***Material Quantities*** - In order to estimate sizing requirements and costs, assumptions regarding recyclable quantities; the ratio of source-separated to commingled recyclables collected; and MRF residue rates are required.

    - Recyclable quantities collected for processing at the MRF were based on:
        - Recycling by residential and business consumers or 30% to 35% of MRF recyclables in the waste stream (see Table 3-2) during the first half of the planning period (i.e., 2015 through early 2020s) - these rates assume a slight higher recycling rate for single-stream (greater convenience) than dual-stream collection
        - Recycling of 50% (dual-stream) to 60% (single-stream) of MRF recyclables during the second half of the planning period (i.e., early 2020s through early 2030)

    These recycling rates translate to overall MSW diversion levels from recycling of 11% to 21% (see Table 3-5), which will increase as organics, hazardous and other material diversion occurs. The recycling rate assumptions reflect notable increases over existing recycling quantities (previously described in Table 3-1). They are based on observed increases achieved by other communities who have moved to commingled collection[6]. How commingling is introduced in these communities varies widely, however, and diversion is difficult to predict prior to actual program implementation. Potential modifications to drop-site facilities, new curbside collections, addition of new materials, use of new containers and signage, new public education campaigns and new recycling policies are just a few examples of program and infrastructure changes that may be made as commingling collections become available. Each of these changes has the ability to increase quantities of recyclables diverted.

        - MRF residue rates of 5% and 10% for dual- and single-streams, respectively[7]
        - 60% of incoming materials will be commingled (dual- or single-stream) - 40% source-separated

4. ***Revenues*** - Revenues are based on current practices (i.e., use of published end-market pricing, brokering, road transportation costs based one-way distances assuming back-hauling) and markets generally used by WGYC recyclers.

Cost and revenue estimations are preliminary in nature and many decisions about service area, commingling levels, siting, land purchase, etc. are required before they can be finalized. Table 3-5 (next page) lists conceptual design and operating assumptions specific to each MRF alternative.

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[6] A review of 30 recycling programs currently operation in the U.S. indicated tonnage increases of between 20% and 140% with the change to single-stream collection. Most of these examples include moves from dual- to single-stream. It is possible that WGYC service areas experience larger increases, given the existing reliance on drop-site collection of source separated materials.

[7] Residue rates vary with types and quality of collected materials, processing automation, positive versus negative sorting, etc. A review of approximately 15 new dual- and single-stream MRF operations in the U.S. listed residue rates of 3% to 15% by weight (both with and without glass in the commingled stream).

Table 3-5 Materials Recovery Facility Analytical Assumptions

DESIGN/OPERATING COMPONENTS	SINGLE-STREAM MRF		DUAL-STREAM MRF (WGYC) Counties only)
	WGYC Counties	Expanded Service Area	
FACILITY DEVELOPMENT/CONSTRUCTION			
Design Basis			
2030 Tons Captured	30,000 tons/year	90,400 tons/year	25,000 tons/year
Diversion due to MRF Recyclables ONLY	21%	21%	18%
Materials Accepted	Cardboard, office paper, newspaper, magazine and mixed paper, plastic #1 (PET), plastic #2 (HDPE), plastics #3-#7 (mixed), aluminum cans and steel containers		
Facility Features			
Property[a]	5 acres	6 acres	5 acres
MRF Building[a]	20,000 sf (2 docks)	35,900 sf (5 docks)	19,400 sf (2 docks)
Scale House/Office	600 square feet with employee break area and restrooms		
Building Attributes	Pre-engineered metal building with utilities and fire suppression (scale house/office has fire extinguisher only)		
Equipment			
Baler System	1	2	1
Other Sorting/Processing Equipment	Sorting stations, trommel/disc screen, air drum separator, magnet, eddy current separator, transfer conveyors vary by option		
Mobile Equipment	Roll-off containers, loaders, forklift vary by option		
Scales	1	1	1
FACILITY OPERATIONS (2015)			
Operations Basis			
2015 Tons Diverted	13,400 tons/year	42,600 tons/year	11,500 tons/year
Diversion due to MRF Recyclables Only	12%	12%	11%
Number of shifts	5/week	5/week	5/week
Employees	15 FTEs	37 FTEs	13 FTEs
Hauling (transporting recyclables from the MRF to markets by road)			
Market Locations	One-way mileage		
Tractors and Trailers	2 tractors/3 trailers	6 tractors/y trailers	2 tractors/3 trailers
Roll-Off Truck and Containers	1 truck/3 containers	2 trucks/4 containers	1 truck/3 containers
Drivers/Mechanics	3 FTEs	9 FTEs	3 FTEs

[a] Values represent minimum size requirements - large property and building footprints are recommended where possible to accommodate unforeseen storage needs or material changes in the future.

Cost/Revenue Modeling Results

The assumptions described above have been used to build cost models for the MRF alternatives (see Appendices H through J). Theses have been developed for use by stakeholders to refine facility alternatives in the future. The tables on the following page summarize capital and operating costs (Table 3-6), revenue potential (Table 3-7) and the resulting annual costs/revenues net of operating costs and debt service (Table 3-8).

Table 3-6 Estimated Costs (rounded to nearest $1,000)

COST COMPONENTS	SINGLE-STREAM MRF		DUAL-STREAM MRF
	WGYC Counties	Expanded Study Area	WGYC Counties
FACILITY DEVELOPMENT/CONSTRUCTION/EQUIPMENT			
Design/Engineering, Permitting & Site Investigation	-$1,362,000	-$2,334,000	-$1,334,000
Land Purchase	-$250,000	-$300,000	-$250,000
Facility Construction	-$6,393,000	-$10,618,000	-$6,265,000
Processing Equipment	-$2,468,000	-$2,468,000	-$2,393,000
Mobile Equipment	-$422,000	-$662,000	-$422,000
CAPITAL COST	*-$10,895,000*	*-$16,382,000*	*-$10,664,000*
CAPITAL COST/TON[a]	*-$363*	*-$181*	*-$427*
ANNUAL DEBT SERVICE FOR FACILITY DEVELOPMENT/CONSTRUCTION ($/year)			
Annual Debt Service - Buildings	-$634,000	-$1,055,000	-$621,000
Annual Debt Service - Equipment	-$388,000	-$419,000	-$378,000
TOTAL AMORTIZED COST	*-$1,022,000*	*-$1,474,000*	*-$999,000*
OPERATING COSTS ($/year)			
Labor	-$461,000	-$1,101,000	-$416,000
Maintenance, Utilities, Residue Management, Miscellaneous	-$570,000	-$1,187,000	-$518,000
OPERATING COST	*-$1,031,000*	*-$2,288,000*	*-$934,000*
OPERATING COST/TON[b]	*-$77*	*-$54*	*-$81*

[a] Based on the 2030 tons listed in Table 3-5.
[b] Based on the 2015 tons listed in Table 3-5.

Table 3-7 Estimated Revenues (rounded to nearest $1,000)

REVENUE	SINGLE-STREAM MRF		DUAL-STREAM MRF
	WGYC Counties	Expanded Study Area	WGYC Counties
ANNUAL REVENUES[a]	*$1,075,000 to $1,508,000*	*$3,483,000 to $4,859,000*	*$947,000 to $1,329,000*

[a] Adjusted for broker fees and costs for (road) hauling recyclables to markets.

Table 3-8 Estimated Annual Costs/Revenues Net of Operations and Debt Service (rounded to nearest $1,000)

COST/REVENUE	SINGLE-STREAM MRF		DUAL-STREAM MRF
	WGYC Counties	Expanded Study Area	WGYC Counties
ANNUAL NET COST/REVENUE	*-$978,000 to -$545,000*	*-$279,000 to $1,097,000*	*-$986,000 - -$604,000*
ANNUAL NET COST or REVENUE/TON[a]	*-$73 to -$41*	*-$7 to $26*	*-$86 to -$53*

[a] Based on the 2015 tons listed in Table 3-5.

The tables above allow the following observations relative to MRF costs:

- There is a clear economic advantage with greater tons - the expanded study area alternative (with a population of over 366,000 compared to only 94,000 in the WGYC area) has estimated per-ton capital and annual operating costs equal to between one-half and three-quarters of the smaller area
- Single-stream advantages over dual-stream will depend upon the tons, types and quality of recyclables collected, and MRF residue levels - the assumptions used in this study indicate that;
    - Recycled tons collected could be 15% higher with single-stream (even with greater residue rates, the tonnage actually recovered is expected to exceed dual-stream)
    - Although costs would be slightly higher for single-stream, the unit costs per ton is lower
    - Total revenues would be slightly greater for single-stream (i.e., as greater quantities recovered)
- It is unknown how the MRF facility and equipment will be capitalized (or by whom), but an annual amortization or debt service schedule is expected over the life of the building and equipment[8] - assuming amortization of the full capital costs shown in Table 3-6;
    - Projected revenues exceed operating costs but do not cover both operating cost and debt service for most scenarios
    - Net revenues are expected for the high market pricing scenario for the single-stream/expanded service area alternative
    - Future capital costs for equipment needed to manage increasing quantities over the planning period are expected to apply primarily to the single-stream MRF alternative for the expanded service area whose quantities will require equipment in addition to that purchased during initial construction - this equipment is expected to include additional sorting stations (2), conveyors, sort equipment (trommel, air drum separator, magnet and baler), a motor scale and front-end loader (and cost approximately $2M in 2013 dollars)

An important economic factor that must also be considered when interpreting these results is the avoided cost of landfilling, which is discussed below.

3.3.2 Economic Impacts on Local Governments and Waste Generators

Ownership and operation of future MRF infrastructure is unknown. If local governments have financial responsibility, the cost of construction and operation described above may fall in full or in part to these organizations and the communities they serve. Similarly, net revenues and savings would be expected to eventually trickle down to waste generators within the service area.

Cost and Savings Allocation By County

Avoided landfill disposal costs (described in Table 3-9 on the next page) will increase as recycling increases and trash quantities shrink. While estimating these savings is useful in comparing the status quo to future recycling alternatives, they cannot be realistically used to modify future costs. It is also important to realize that:

[8] Debt service has been assumed constant throughout the planning period to cover the repair/replacement of equipment and repair/upgrades of the buildings.

- Counties will earn less tip fee revenues but will have fewer tons to transfer/dispose - this may not be an even offset, however, as fixed costs will remain regardless of tons managed
- Haulers will pay less tip fees and will ideally pass those savings on to their customers - this will likely require a revision in haulers' pricing structures
- All avoided costs may not be realized as fixed facility costs occur regardless of the tonnage disposed

Table 3-9 Estimated Savings from Avoided Landfill Tip Fees[a] (rounded to nearest $1,000)

YEAR	SINGLE-STREAM MRF		DUAL-STREAM MRF
	WGYC Counties	Expanded Study Area	WGYC Counties
2015	$1,005,000	$3,195,000	$863,000
2030	$2,250,000	$6,780,000	$1,875,000

[a] Based on quantities in Table 3-5, average tip fee of $75/ton (see Table 1-1 fees and Table 3-1 population for WGYC).

Table 3-10 (next page) estimates how the costs and revenues described in Table 3-6 through 3-8 above may be apportioned to the counties for each MRF alternative (on a population basis). As shown in the table, there are expected to be net annual costs - assuming debt service is part of on-going operating costs - for all counties with the exception of the high revenue range in the expanded service area. If these net costs/revenues trickle down to the waste generator level and are considered on a strictly residential basis, the per-household economic impacts could be[9]:

- Single-Stream/WGYC Counties - $6 to $10/household-year additional cost
- Single-Stream/Expanded Area - $1/household-year additional cost to $3/household-year revenue
- Dual-Stream/WGYC Counties - $6 to $10/household-year additional cost

In reality, other waste management systems changes including both collection and disposal practices are likely to change as well, and would likely balance out these impacts. As noted above, a clearer perspective of the difference between status quo waste management costs (i.e., largely described by the landfill disposal fees) and potential future costs that include a regional recycling focus can be obtained by comparing the costs/savings in Tables 3-9 and 3-10.

[9] Using the U.S. Census Bureau Quick Facts persons/household data and relative service area populations.

Table 3-10 Estimated Net Annual Cost/Revenue Per County in 2015[a,b,c]

COUNTIES (% of service area population)	SINGLE-STREAM MRF		DUAL-STREAM MRF
	WGYC AREA	EXPANDED AREA	WGYC AREA
Fremont, ID (15%)	-$147,000 to -$82,000	NA	-$148,000 to -$91,000
Madison, ID (49%)	-$479,000 to -$267,000	NA	-$483,000 to -$296,000
Teton, ID (12%)	-$117,000 to -$65,000	NA	-$118,000 to -$72,000
Teton, WY (24%)	-$235,000 to -$131,000	NA	-$237,000 to -$145,000
WGYC TOTAL	***-$978,000 to -$545,000***	NA	***-$986,000 to -$604,000***
Fremont, ID (4%)	NA	-$11,000 to $44,000	NA
Madison, ID (12%)	NA	-$33,000 to $132,000	NA
Teton, ID (3%)	NA	-$8,000 to $33,000	NA
Teton, WY (6%)	NA	-$17,000 to $66,000	NA
Bannock, ID (24%)	NA	-$67,000 to $263,000	NA
Bingham, ID (13%)	NA	-$36,000 to $143,000	NA
Bonneville, ID (30%)	NA	-$84,000 to $329,000	NA
Clark County (0%)	NA	$0	NA
Jefferson County (8%)	NA	-$22,000 to $88,000	NA
EXPANDED AREA TOTAL	NA	***-$279,000 to $1,097,000***	NA

[a] All estimates include debt service.
[b] Based on population estimates in Appendix F.
[c] Excludes collection costs.

Funding Opportunities

Depending how MRF costs and benefits are allocated, there are several funding mechanisms at the regional or local level:

- MRF user fees - assessed directly on the facility users (e.g., tip fees for delivered materials paid by haulers and passed on to their customers)
- Bonds or loans - backed by local governments
- Grant and foundation funding - Appendix K includes a listing of external funding sources
- Indirect fees (or a "benefit" fee) - charged to an overall service area despite actual MRF usage (reflects the benefit of the facility's availability)
- City/county general fund (i.e., property tax assessments)
- Special assessments (such as Teton County, Wyoming's ability to levy a special purpose excise tax)

Job Creation Potential

Table 3-11 (next page) describes an estimated job creation level of between 15 and 43 full-time equivalent (FTE) jobs created in the planning period (see Appendices H through J). These represent new jobs generated from MRF processing and hauling processed materials to markets. Jobs associated with hauling collected materials from

local collection points to the MRF would be in addition to these values, but are generally assumed to already exist. Job creation projections will increase over the planning period as additional materials are diverted.

Table 3-11 Job Creation Potential in 2015 (in full-time equivalents, rounded to nearest FTE)

JOBS	SINGLE-STREAM MRF		DUAL-STREAM MRF
	WGYC Counties	Expanded Study Area	WGYC Counties
MRF Processing	15	37	13
Hauling Materials to Market	3	9	3
TOTAL	*18*	*46*	*16*

3.3.3 Other Cost Impacts

Eliminating Glass from the Commingled Stream

Many communities have observed operational and economic problems associated with including glass recyclables in their commingled streams, including[10]:

- Increased maintenance/reduced life of processing equipment from abrasion
- Lower quality of non-glass materials from glass contamination
- Lower quantity and degraded quality of glass from breakage in commingled mix
- An increasing number of processors and markets discourage or reject materials that have been mixed with glass (e.g., both the new Boise MRFs and the Salt Lake City MRF)

When the cost impacts of excluding glass in the commingled recyclables processed at the new regional MRF was evaluated for the Single-Stream/Expanded Area alternative (see Appendix L), economic benefits included the need for less indoor and outdoor processing space, less materials management and higher revenues (glass pricing ranges from low to negative). The specific benefits are estimated to be:

- Capital costs - savings of $811,000
- Operating cost (including debt service) - savings of $103,000/year
- Revenue earnings - additional $28,000 to $102,000/year (resulting from not managing glass)
- Net annual benefit - $131,000 to $205,000/year
- Additional upstream savings earned by not hauling glass from local collection points to the MRF

Hauling Recyclables to Market Via Rail

Rail haul can be a cost-effective means of transporting recovered materials over long distances.[11] Idaho functions mostly as a pass through (or "bridge") state with a focus on moving materials between the west coast

[10] Recycling programs in Durango, CO and Laramie, WY are two of many programs who have recently reported economic struggles associated with continuing to accept glass http://www.durangoherald.com/article/20131010/NEWS01/131019943/ and http://wyomingpublicmedia.org/post/laramie-hosts-forum-solve-glass-recycling-problem).

and locations east of the state. Union Pacific Railroad (UP) operates a transcontinental line east and west of Idaho Falls, as well as a "public team track" on Yellowstone Highway in Idaho Falls, which can be used to load car-load quantities of materials from trucks into ordered or leased rail cars. Appendix M includes detailed information on potential rail haul opportunity.

Preliminary discussions with UP managers indicated that when haul distances exceed 400 miles, rail costs can be lower than road haul (this could apply to fiber and aluminum bales generated at the MRF). Anecdotally, however, material brokers and markets have indicated that this break point may be closer to 1,000 miles.

Preliminary costs of rail haul were estimated to range from $0.11/ton-mile to $0.20/ton-mile. These values do not include hauling bales to UP's track, bale loading, container transfer, train switching or fuel surcharge costs (see Appendix M). Additional MRF storage space (at costs in excess of those described in Table 3-6) would also be required to accumulate car-load quantities of baled materials prior to shipping.

Alternatively, road haul costs are estimated to range from $0.09/ton-mile to $0.24/ton-mile and are inclusive of all expenses (see Appendices H through J). Based on this comparison, it does not appear that rail haul is a cost-effective option for moving MRF materials at this time. However, as tonnages increase a more detailed evaluation of rail haul may yield more optimistic findings.

3.4 Environmental Results

The environmental benefits described in Table 3-12 provide both a summary of diversion potential and greenhouse gas emission reductions associated with a new regional MRF.

Table 3-12 Environmental Benefits (rounded to nearest 100 tons, $mtCO_2Es$)

BENEFIT	WGYC STUDY AREA		EXPANDED STUDY AREA	
	2015	2030	2015	2030
Waste Diversion[a]				
Single-Stream MRF				
Tons Diverted	13,400	30,000	42,600	90,400
% Recycling	12%	21%	11%	21%
Dual-Stream MRF				
Tons Diverted	11,500	25,000	NA	NA
% Recycling	11%	18%	NA	NA
Greenhouse Gas Emissions Reduction ($mtCO_2e$)[b]				
Single-Stream MRF	61,000	133,000	196,000	394,000
Dual-Stream MRF	53,000	111,000	NA	NA

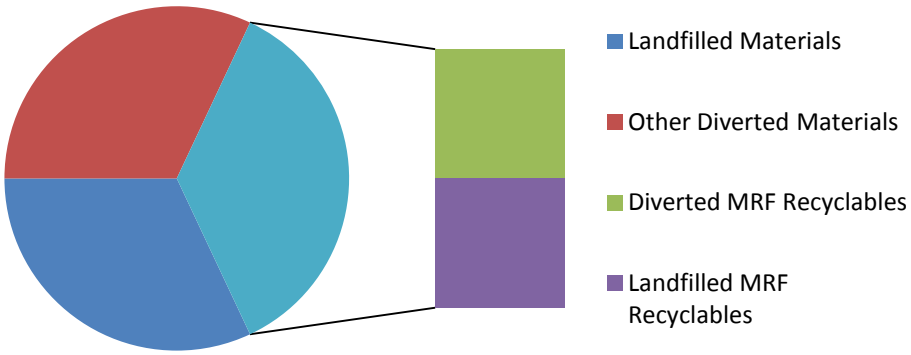
[a] Based on diversion versus recovery levels (see Appendix F for detailed diversion estimates).
[b] Based on the International Council for Local Environmental Initiatives Recycling and Composting Emissions Protocol, Version 1.0 July 2013 (see Appendix N). USEPA's Waste Reduction Model (June 2013) estimates GHG reductions that are roughly 60% of those generated by the ICLEI protocol due to use of slightly different input values.

[11] Rail haul efficiency has been tied to the ability to move one ton of freight 410 miles/gallon of diesel, while road haul requires about 100 miles/gallon for the same ton. Trains also generate lower emissions and have fewer fatalities on a per-mile basis http://www.bayrailalliance.org/why_trains.

Waste Diversion

The diversion rates in Table 3-12 reflect the eventual diversion from recycling ranging from 18% to 21% in 2030. Figure 3-2 illustrates the relativity of these results in terms of the overall waste stream: While it is expected that MRF materials in the municipal waste stream will be recycled at a rate of 50% to 60%, the resulting diversion from recycling within the total waste stream will be lower. Total diversion will obviously be augmented by organics recovery, special waste management and other programs that cannot be quantified at this time. It is likely, however, that a new MRF, a regional move to commingled recyclables collection and related policy changes will drive more diversion from non-recycling programs in the future.

Figure 3-2 Relative Diversion of MRF Recyclables to Overall Diversion (2030)



Greenhouse Gas Emission Reductions

GHG emission reductions were estimated for processing diverted recyclables instead of landfilling the same materials[12] based on two methodologies. The metric tons of carbon dioxide equivalent ($mtCO_2E$) summarized in Table 3-12 for 2015 are roughly equivalent (in terms of emissions) to removing between 10,000 and 36,000 passenger vehicles in the WGYC and expanded areas, respectively[13].

3.5 Observations on MRF Impacts to Existing Recycling Programs

Identifying the economic and environmental impacts to programs, policy and infrastructure upstream of the MRF *were not included in this study*. Evaluation of these impacts will be critical to final decision-making.

Potential Economic Impacts

- Changes to local collection of commingled recyclables - based on observations shared widely by many U.S. communities, commingled collection can be expected to be less costly (and safer) than multi-materials collection (trash collection should also be reduced as more tons are recycled)
- Cost of storage and transfer of commingled recyclables for haul to Idaho Falls - especially for Teton, ID and Teton, WY (i.e., respective 75- and 90-mile haul distances to Idaho Falls)

[12] Emissions associated with hauling were not estimated in this study. Emission decreases associated with collecting existing trash quantities will likely be largely offset by increases from collecting future recyclable materials.
[13] Based on the USEPA conversion at http://www.ccdsupport.com/confluence/pages/viewpage.action?pageId=91554027.

- Need to provide hauling - instead of relying on brokers to arrange (and paying for it with revenue earnings), local governments will likely need to provide hauling to Idaho Falls themselves
- Loss of current recyclable revenues - most MRF alternatives will have net annual costs (inclusive of debt service) and need to be balanced by avoided landfill savings or other savings/revenue sources
- Reduced labor for marketing and outreach - these may be duplicative with future regional staff
- Loss of landfill revenues - fixed costs may not be addressed by reducing tons disposed
- Better MRF pricing on a broader regional level - a new MRF in southeastern Idaho will create competition and modulate pricing for the new MRFs currently being build in the Boise area (and vice versa)

Potential Environmental Impacts

- Increased diversion
- GHG reduction from diverted recyclables (it is not expected that GHGs associated with future transport of recyclables to the MRF will increase notably over current broker hauls to markets (many of which are in the Idaho Falls area or a comparable haul distance)
- Opportunities for diversion of hard-to-recycle/problem materials - associated with back-hauling recyclables to Idaho Falls

Potential Social Impacts

- The WGYC study has been inclusive of many governments, waste management businesses and non-profit stakeholders within the WGYC region and beyond (see Appendix A) - but representation by residents and other businesses has been light (this would likely be improved during MRF development, facility siting and policy-making)
- The MRF itself would ostensibly be accessible to all waste generators in the service area - when siting the facility, however, care must be taken to avoid unfairly burdening or discriminating against any community with daily operations
- Accessibility to local collection opportunities will be determined by the public, private and non-profit stakeholders at the community level but it is expected that a new commingled MRF will process as many or more recyclables than are currently accepted by haulers (coupled with the increased ease of commingling, recycling will be more convenient for waste generators)
- Waste diversion policy will have pros and cons for stakeholders - in addition to supporting the MRF, these will likely reduce illegal dumping and make basic waste management services more consistent across the service area (these issues as well as recyclables collection are not covered by this study, however).

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Section 4
REGIONAL RECYCLING ORGANIZATION

The purpose of this analysis is to evaluate an organizational structure for government members that will support new recycling infrastructure as well as other waste diversion activities over the 15-year planning period. The benefits of a regional organization will be:

- To provide leadership within the region to create an environment in which reduced consumption and resource conservation over waste is fostered as a way of life
- To help generate the resources necessary to develop a MRF that meets the needs of stakeholders within a broad service area
- To generate enough recyclables to support an economically-sustainable facility
- To consolidate operational, policy development and/or educational activities to reduce inefficiencies and increase consistency throughout the region

This evaluation is challenging as WGYC has yet to identify the MRF service area or the facility ownership and operational responsibilities. *For the purposes of this study, it is assumed that a new solid waste organization will support a new regional MRF in some fashion, the MRF will be located in Idaho Falls and the organization will be registered within the State of Idaho.*

4.1 Process

WGYC stakeholders have considered various aspects of a potential new recycling organization, and obtained the input of both the Idaho Association of Cities and the Idaho Association of Counties. This process includes:

- Considering what functions the organization should have
- Identifying the most suitable structure for a solid waste organization
- Identifying policy issues

4.2 Results

4.2.1 Potential Functions of a Regional Recycling Organization

The specific responsibilities and authorities of this organization will vary with the ownership of the MRF and the specific role the organization plays in its development and operation. It is expected that the organization will be apolitical and a separate entity from member organizations. A listing of probable functions include the ability to:

- Implement a regional waste diversion system
- Establish standards and regulations (materials accepted, sales procedures, residue levels, etc.)

- Raise funds by selling recyclables, assessing user fees (i.e., tip fees, waste generator fees, member payments, etc.), borrowing money and incurring debt
- Purchase or sell property and facilities
- Plan, develop and operate capital improvements
- Contract for development and operation of capital improvements or other services
- Establish policies and practices throughout the region that support the MRF (especially increasing tons recycled and outreach activities)
- Employ staff to conduct consolidated activities (many of which may be otherwise duplicated in many communities)
- Implement a uniform approach to recycling program design, marketing and education/outreach activities to both reduce "reinventing the wheel" at the local level and create a consistent approach and message region-wide

4.2.2 Joint Powers Authority/Solid Waste District

The most appropriate organizational structure may not be known until the ownership and operation of the MRF is determined. Based on stakeholder discussions and input from the Idaho Associations of Cities and Counties, a joint powers authority (JPA) may be the most suitable organizational concept for the support of a regional MRF (Appendix O includes a detailed list of the pros and cons of several alternatives). Joint powers authority is an organization that is legally separate from member organizations - and is most commonly used by public agencies to address new or existing issues, fund projects and capital improvements and to act as a representative body for a specific function.

The State of Idaho specifically delineates solid waste (and sanitation) districts in state statute. These districts are essentially JPAs and include multiple county governments. While the concept of a solid waste district was initially designed around county disposal responsibilities, it can provide a workable model for recycling as well. The specific requirements of a solid waste district in Idaho include:

- Election by each member county to join the district and appoint a representative to the district's board of directors (members serve two-year terms)
- A board of directors with at least three directors and with a president and treasurer - ex-officio, non-voting members can also be appointed to the board
- Independent staff to ensure that appropriate resources are allocated
- Develop operational bylaws, set meetings and establish an annual budget
- The Idaho solid waste districts are able to conduct all of the functions described above, including the payment of unmet project costs by district members on a per capita, weight or volume basis (individual districts have no power to assess property taxes)

JPA Examples

There are several existing examples of JPAs within the WGYC region included the Town of Jackson/Teton County Joint Powers Recycling and Waste Reduction Board, and was dissolved in 2009 so that operations could be fully turned over to Teton County (the old board became an advisory board). There are two existing solid waste districts in Idaho:

- Southern Idaho Solid Waste District (SISWD)- this organization focuses on a regional landfill and nine transfer stations but also offers recycling and outreach (a copy of SISWD's original bylaws are provided in Appendix P);
    - Members include seven counties (with each represented on the district's board of directors)
    - Anticipated 2013/2014 $7.4M gross budget costs which are expected to be off-set by $1M in recyclables revenues
    - Counties collectively pay remaining net budget costs - each county determines its own fund-raising mechanism (some utilize property tax assessments and others transfer station tip fees)
- Eastern Idaho Sold Waste District - this organization was formed in anticipation of a new waste-to-energy (WTE facility) that has yet to be built and is on hold at this time

Interstate Membership

Teton County, WY recycling program utilizes many of the same brokers and markets as those employed by counties in southeastern Idaho. Not surprisingly, Teton County, WY is an active member of the WGYC and is likely to be a regional partner in future waste diversion options.

While including a Wyoming county in an Idaho recycling district is possible, both district development and operation is more complicated. For example, district development requires the review and approval of the Idaho Secretary of State. Bylaws will need to address any operations that require a delineation of one state or another (especially dispute resolution).

One option may be to develop an Idaho solid waste district with Idaho members and subsequently contract with Teton County, WY for its use and support of the MRF. This option would simplify district development and operation, but would limit Teton County, WY's ability to participate in decision-making.

4.2.3 Policy Considerations

Policy development by governments at a regional level will be challenging for several reasons:

- Costs and benefits (and therefore motivations) will vary between communities
- Regional consensus on policy development will not translate directly to implementation - while the organization may agree on general requirements or outcomes, actual policy language approved in each county may vary
- Where policy applies to non-governmental entities, enforcement and reporting resources may be required

Policies can be primarily incentives - such as pay-as-you-throw (PAYT) variable rate trash pricing, technical assistance and awards programs. Alternatively, policies can include mandates, which can include curbside

collection requirements, disposal bans or even flow control[14]. Any requirement or mandate should include adequate resources for enforcement.

Disposal Ban Example

A disposal ban would ideally be promulgated at the county level and be applied at disposal points (i.e., transfer station or landfill). Bans are straightforward to implement and are expected to be the best policy option to tackle early in the planning period. Considerations include:

- Can begin with one material (cardboard is a common target) and be expanded to include others once the public has become accustomed to the ban
- Need for reasonable collection options for banned material(s) - whether drop-site, curbside or both
- Need for a comprehensive, consistent education effort
- Clear delineation of responsibility between haulers and county disposal sites for enforcement

Disposal ban examples include:

- *Nashville/Davidson County, TN bans the disposal of cardboard, yard waste and electronics. The cardboard ordinance was implemented in July 2012 and can be found by searching for Metro Code 10.20.110 at http://library.municode.com/index.aspx?clientId=14214*
- *Fort Collins, CO implemented a similar cardboard disposal policy in early 2013 that targets diversion of 80% of the cardboard previously landfilled (or 12,000 tons). Sample language can be found by searching for Ordinance 023 at http://citydocs.fcgov.com/ ?scope=doctype&dn=City+Clerk&dt =ORDINANCE&vid=3&q=023&cmd=search)*

Variable Rate Trash Pricing Example

Implementing a pay-only-for-what-you-use pricing strategy has been proven to be one of the strongest recycling incentives practiced in the U.S. PAYT would most likely be applied at the municipal level and is inexpensive for cities to implement, although it may not be politically feasible in every city. PAYT will require haulers who don't already have variable rates to adjust their fee schedule, billing structure and container inventories. Some customers' rates may increase ("large" trash generators) and some may decrease ("small" trash generators). Considerations include:

- More easily imposed on small- to medium-sized residential properties (hard to implement in large multi-family complexes - many commercial fee structures are already based on variable pricing)
- Can target trash service only, or can require variable rates for bundled trash and recycling service (receiving recyclables collection at no extra cost provides a "double" incentive to customers)
- Need for reasonable recyclables collection options (whether policy targets trash pricing only or bundles trash and recycling) so that customers have the means to decrease the trash quantities

[14] Although traditional flow control may not be feasible, a "default" flow control approach that requires haulers to use a specific facility unless their customers choose otherwise may be effective (Boulder County, CO has found this works well where haulers generally support the facility).

- Can be difficult for self-haul/drop-site collection but can be done where pay stations are staffed (Fremont County, WY uses PAYT at their drop-sites)
- Can also be an effective vehicle for other regulatory requirements such as establishing a minimum list of recyclables to be collected and/or level of commingling, requiring collected quantities be reported, requiring use of alternative fuels by haulers, etc.

PAYT examples include:

- *Cheyenne, WY uses PAYT trash pricing and enjoys a MSW total diversion rate of over 40% (see the city's 2014 variable rate fee schedule at http://wy-cheyenne2.civicplus.com /DocumentCenter/ Home/View/12020 (select Sanitation Fee Schedule & Ordinance document, scroll down to Private Residences)*
- *Boulder, Colorado has a comprehensive PAYT policy that includes trash, recyclables and organics for residential customers - the city's MSW diversion rate is nearly 50% (see www.colocode.com/ boulder2/chapter6-12.htm)*

Universal Curbside Example

This policy would require that all customers receive curbside trash collection, and can be an effective tool for increasing diversion when curbside recycling is also provided and/or PAYT pricing is used. Universal collection is different from mandatory recycling in that it does not require waste generators to recycle - but it does require haulers to provide service and customers to pay for it. This type of policy is typically applied at the municipal level (curbside in sparsely populated rural/unincorporated areas may not be affordable). Considerations include:

- Initial implementation can be difficult where many residents and businesses currently self-haul and/or where public or private haulers are not prepared to provide curbside service
- Can be implemented whether trash collection is municipal or private, but is more challenging in an open market system with no municipal control
- Is typically more effective where self-hauling of municipal solid waste is limited/less accessible and/or prices are adjusted to be comparable to curbside collection
- Collection prices generally become affordable as more customers receive service
- Reduces instances of illegal dumping and burning

Universal collection is common in the southeast. Two Florida examples include:

- *City of Sarasota - http://library.municode.com/HTML/11553/level4/PTIITHCO_CH16RESOWA_ ARTIICODIREMASOWA_DIV1MARE.html*
- *Sarasota County - https://www.scgov.net/SolidWaste/Documents/Solid%20Waste%20Ordinance% 202006%20001.pdf*

4.3 Observations on Challenges to Forming a Regional Solid Waste Organization

While there are clear benefits to organized leadership, resource development and policy-making in a regional recycling system, creating an effective organization is much more challenging, however, than compiling the pros and cons about various structure options and saying "go" - these challenges are often more pronounced in rural settings and result from no clear initial leadership, multiple sets of elected officials with conflicting objectives, differing member sizes and goals, and overall lack of organizational capacity.

Overcoming these obstacles and building a collaborative environment may require one or more project "champions" (ideally commission or council members), facilitation by a neutral, third party to minimize concerns over unequal partners, resources and influence and an initial inclusive task force to educate members and collect information. Appendix Q includes a suggested approach for addressing solid waste system changes at the city or county level, and is especially appropriate for policy development.

Section 5
RECOMMENDATIONS for IMPLEMENTATION

The purpose of this section is to provide implementation guidance for regional governments to use in implementing one or more of the alternatives evaluated in Sections 3.0 and 4.0 (although most of the actions described below are applicable to any regional programming or infrastructure). While the recommendations are presented sequentially, several of the actions will likely need to be conducted simultaneously.

5.1 Preliminary Steps

This study represents feasibility-level evaluations only. Several more definitive assessments and decisions will be required to make a regional MRF (or other diversion infrastructure) defensible in the future.

1. *Define the Region's Boundaries* - Moving forward on a regional recycling project will be difficult (if not impossible) until an initial service area is identified (such that tons, facility location and other criteria can be determined). This step is expected to include:

    - Leadership by one or more champions who are committed to the project (senior staff, city councilpersons, county commissioners) will be critical
    - Using the results of this study to catalyze action and provide baseline information to support decision-making
    - Initial service area size (or regional membership) will likely change over time - organizational documents should allow for new members to be added and existing members to be deleted

    The study has previously noted the value of working to develop a MRF service area that will generate enough recyclables to provide sustainable economics (such as expanding beyond the WGYC area). It should also be noted that even when sound data has been collected that provides a clear description of existing recyclable tons in the service area (see the recommendation below), ultimate diversion levels will not be known until new commingled collection programs and policies are actually implemented. A larger service area with a mix of rural and urban communities will not only generate more recyclables, but will help minimize the risk of these unknowns (especially for more rural areas).

2. *Establish Waste Diversion Goals* - Once established, clear quantifiable goals can make decision-making by multiple parties easier (establishing the goals in the first place may be the challenge). The goals for a regional MRF project should:

    - Determine what is meant by "increasing waste diversion in the region" and "cost-effective" (both are objectives of this study)
        - Goals can be at odds with one another if their relationship and measurement is not well-defined
        - Based on the results of this study, an MSW diversion goal of at least 20% by 2030 from the recycling of MRF materials only is recommended (see Table 3-12)

- Determine other goals - GHG reductions, job creation, operation as a social enterprise employing a specific labor force, local reuse/repurposing/remanufacturing and other goals can be as important as cost containment

3. *Collect Data* - One of the primary reasons that the private sector does not develop local infrastructure is the lack of data on which to base a sound business decision. This data will ultimately need to be assimilated at a regional level to evaluate the service area, current and future tons. It will be critical to measure:

    - Actual quantities of generated, disposed and recycled waste in each city/county every year
    - Calculation of diversion rates
    - Composition of landfilled waste - to identify materials that can be targeted for future diversion efforts (assessed at each transfer station or landfill at least every other year - staff can easily be trained to conduct this evaluation)
    - Collection metrics including subscription/participation rates for trash and recyclables, size of hauler service areas, where trash and recyclables generated in each community are ultimately managed

    Data collection will be especially necessary for any non-WGYC counties ultimately involved in a new regional MRF, as this study did not included a review of existing practices, materials or quantities.

4. *Verify Cost Impacts to Local Governments and Waste Generators* - While Section 3.5 identified some of the economic and environment impacts of a regional MRF to local WGYC counties, specific costs were not estimated. These could be significant and will likely include changes to collection systems, new transfer infrastructure and transportation to Idaho Falls. Benefits will include increased diversion and decreased GHG emissions, as well as significant economic impacts associated with landfill disposal (most likely accrued at the generator level). The comparison of changes in future costs and benefits of local programming will be a critical factor for decisions regarding a new MRF.

5.2 Encourage Multi-Sector Partnerships

During the course of this study, LBA has observed an inconsistent level of interest among WGYC city and county members in this project - and conversely a generally keen interest by private hauler, broker, processors and end-market stakeholders. These observations, coupled with the lack of county collaboration on the scale considered in Section 3.0 and the relatively high capitalization effort involved in bringing a new MRF on-line indicates the value of a public/private partnership for this project.

There are several types of facility ownership/operation combinations that may be appropriate for a regional MRF (Appendix R includes a summary of each). Three are discussed below.

Public Ownership/Public Operation

The public sector has advantages over the private sector that include the ability to control the waste stream through regulation, fund capital improvements with municipal bonds and no need to generate profits. Key steps for a public project include:

1. ***Formalize a Regional Recycling Organization*** - This would likely be a solid waste district (JPA) with the ability to develop new infrastructure, buy and sell property, raise funds and incur debt, establish standards and regulation, and hire staff. Organizational bylaws will need to be developed, and a decision regarding what the district's relationship with Teton County, WY will be (such as member or contract user of the facility). Additionally, individual county members will be required to pass a resolution to join the district per State of Idaho statute.

   A final step of organizational development will be to establish relationships with private and non-profit partners. These may include haulers, brokers, markets and providers of other services (such as education and outreach).

2. ***Conduct a Final MRF Design and Generate Definitive Capital/Operating Costs*** - This will require specific decisions to fine-tune the estimates included in this study. Relatively conservative assumptions were used in developing the Section 3.3 estimates - fine-tuning may well identify opportunities for cost reductions[15];

   - Facility location - Appendix R includes siting considerations
   - Facility features - dual- or single-stream processing, ration of commingled versus source-separated materials, inclusion/exclusion of glass in the commingled stream, etc.
   - Staffing needs - expected to include the MRF laborers, operators and mechanics estimated in Section 3.3 and additional staff to
     - Oversee facility development and management (may be a temporary position)
     - Manage the MRF, conduct marketing and assist with regional policy development (new full-time position)
     - Legal counsel (may be a part-time contractor)
   - Include space for all equipment installation, use and repair for the life of the MRF but clarify any units whose purchase can be delayed until later in the planning period when greater quantities are collected - this study found that several pieces of processing, weighing and mobile equipment were not required in the expanded service area initially, but that additional costs of approximately $2M (2013 dollars) would be required in the future
   - Revise contingency factors appropriate to final design (typically lower than those used in a preliminary estimate such as that presented in Section 3.0) and escalate cost estimates to reflect future value over the planning period

3. ***Establish a Funding and Revenue-Sharing Strategy*** - Once decisions about how the MRF will be capitalized, designed and built are made, an operating budget will be required. To develop a balanced budget, decisions about the need to generate funding other than materials revenues to cover net costs will be needed (Section 3.3.2 identified several options - one additional option is payments made by the

[15] Examples include donated or low-lease property, used instead of new equipment (especially mobile equipment), eliminating glass, contract hauling of recyclables to markets and/or use of CNG-fueled tractors and trucks.

members of the solid waste district[16]). Alternatively, the MRF may generate net revenues (revenue-sharing options can include hauler rebates, district member rebates and/or others). These decisions will also need to consider how avoided landfill cost (savings) will be realized and by what parties.

4. ***Evaluate Policy Needs and Implement Effective Outreach to Increase Recyclables*** - Section 4.2.3 identified several policies for city and county consideration. While these decisions will likely be made at the local level, the ability for consistent rule-making across the county will produce the best results - the district's leadership will be critical to making this happen. If local governments do not develop effective policy to drive an adequate quantity of recyclables to the MRF, they risk the economic sustainability of the project.

   An effective public education and outreach program should be an integral part of this step. It should consider components that will increase recycling levels such as standardizing programs so the same MRF recyclables are collected in every community and implementing a recognizable region-wide brand and messaging.

Public Ownership/Private Operation

A MRF that is publically owned but privately operated would allow the public sector to retain control over the facility while taking advantage of the private sectors' processing and marketing expertise. The relationship with the private sector should be established through contract and may include a range of services. For the purpose of this discussion it is assumed that services are limited to MRF operation and materials marketing[17].

Many of the study's stakeholders are haulers, brokers, processors and end markets (see Appendix A) that already offer recycling services or operate programs in the region. Most of them contemplate expansion or changes to their programs on a regular basis. One or more of these stakeholders may be interested in either a partnership with regional governments or developing their own facility in the future.

In addition to the steps for public ownership/public operation described above, the district would need to undertake procurement of a private MRF operator (contractor):

- Identify and screen interested parties based on minimum qualifications - typically by issuing a Request of Interest and/or Request for Qualifications
- Select the top proposer based on cost and/or operations proposal - by issuing a Request for Bids (to obtain costs only) or a Request for Proposals (to best take advantage of proposer's expertise in MRF operations and recyclables marketing)
- Negotiate a contract with the highest ranking proposer - to establish performance standards, marketing requirements, payment language including any revenue-sharing incentives, contract term (expected to be in the range of 10 years in length if the contractor is responsible for any facility or equipment purchases)

[16] Idaho solid waste districts have the ability to require members to help address unmet costs. The SISWD's regional landfill operation is paid for by member counties on a per-ton basis.
[17] Other services can include facility design, construction and operation and even ownership with future transfer of ownership to the government.

On-going efforts will require appropriate supervisory and legal staff time to oversee and administer the contract.

Private Ownership/Private Operation

If WGYC is successful in identifying the need and potential for a new regional MRF, the private sector may ultimately pursue regional processing solutions without the formal involvement of public agencies. In this scenario, few if any of the steps noted in the page above may be required (for example, a formal solid waste district may not be necessary).

The owner/operator of a private MRF may utilize contracts with local recyclers, establish tip fees or implement revenue-sharing depending on quantities processed and the overall economics of the facility. The best way for governments to have some standing and say in these factors is to be involved as a credible partner as early as possible during MRF development. This partnership may be informal but should include local policy development as well as outreach/education programming to effectively increase regional diversion and drive recyclables to the facility. The benefits of regional collaboration cannot be over-estimated regardless of the ownership/operation scenario eventually implemented.

Most Recent Progress

Two recent efforts have been undertaken - or are currently being undertaken - to increase the potential for increasing recycling efforts in the region:

- Final WGYC stakeholder workshops held in April 2014 (one held in Rexburg and one in Driggs, ID) - to evaluate the next steps for regional collaboration, working on public/private sector opportunities, raising funds and implementing new policy to support an economically viable MRF (Appendix S includes the key observations from these meetings)
- Feasibility evaluation by Teton County, WY of MRF scenarios including additional western Wyoming county collaboration, as well as Teton, ID (this work is expected to be completed during the summer of 2014)

5.3 Evaluate Other Waste Diversion Strategies

This study focused exclusively on recycling. As shown in Figure 3-2, however, MRF recyclables represent only a small part of existing diversion levels. These recyclable quantities will increase as recycling is promoted through new local policy and regional outreach programs. The typical MSW stream, however, also includes about 30% organics (see Table 3-2) - suggesting that future focus on diverted yard waste, leaves, grass clippings and food waste in the WGYC region would yield even greater diversion levels. Agricultural waste and C&D materials (at least in years when the economy is strong) also represent diversion opportunities for the region.

5.4 Potential Linkages with Other WGYC Community Projects

A final aspect of the study results is a review of its relativity to other active work projects within the overall Sustainable Communities program. The intent of the program is to identify efficiencies and leverage resources and data where feasible to advance final outcomes. It is expected that the Regional Index of Sustainability Indicators will benefit directly from the Regional Recycling Study findings (the Indicators project is scheduled to be underway during Spring 2014). It is anticipated that this study will also be valuable to the Regional Plan for Sustainable Development effort.

5.5 Final Observations

While there are many questions to be answered before WGYC can embark on a new regional recycling facility, it is hopeful that these public agencies will begin work to rectify the $4.8M/year missed opportunity that the status quo represents (this opportunity is much larger if counties in addition to WGYC are considered). To be successful, however, it will be important to consider several critical pieces that must be in place before facility development of a new MRF is feasible:

- *Collaborate broadly to maximize the service area and turn the multi-million dollar missed opportunity into a strong driver for increased diversion and reduced costs – if decentralized, voluntary recycling programs with few incentives or mandates were all it took to support a new MRF, there would already be a regional facility in southeastern Idaho*
- *If governments are not willing to work together to make real program and policy changes that lead to cultural and behavioral changes around the concept of resource (instead of waste) management, there is little or no likelihood that a regional MRF will have sustainable economics*
- *Waste diversion is key component of a regional, resource-based economy that should be developed to play an integral role in the overall sustainability of the region*