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Technical Reports: Proposed New Business Lines Focus Groups Summary

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Executive Summary

Introduction

This report outlines the market opportunity of five potential new business lines, and provides preliminary operating revenues for each line. The identified opportunities are consistent with the Authority's strategic mission, are economically feasible, and have attributes that the private sector may not be able to address. Each of the new business lines create the opportunity for the Authority to contribute to Missouri's future as their vision statement contemplates. In the course of identifying the market opportunities a number of possible threats were identified. The business line concepts now need to be proofed against the possible threats as well as statutory or policy limits.

This Executive Summary includes five sections:

- Overall Process and Findings
- Business Line Ranking
- Business Line Ranking Narratives in order of Rank,
- Assumptions Used in the Model, and
- Next Steps.

Overall Process and Findings

The seven-month process of developing proposed business lines investigated a number of opportunities for the Authority. The process started with 20 ideas that the Authority staff reviewed, ultimately selecting five. These five ideas were sketched into conceptual business lines and presented to five focus groups. After the focus group input, a review was done of Missouri's demographic profile and economic analyses of market potential were prepared. The preliminary findings were then reviewed with subject experts.

Table One provides a summary of these findings. The intent of Table One is to provide an overview of the probability of success and an estimate of the revenue potential within the first five years. It is divided into four sections. The first section has the probability and amount of revenue potential by three time periods, the first 18 months, the next two and one half years and after four years. For example, the cell for the first 18 months Alternative One will read medium - \$144,000. This says that there is a fair probability that the Authority can earn \$144,000 annually during this period. Each cell represents a discrete period and the dollar amounts are annual.

The second section of Table One shows the source of the revenue calculation. The assumptions used to calculate revenue follow at the end of this Executive Summary.

Again there is a probability assigned to each revenue source and, like section one, dollar amounts represent a discrete period and the dollar amounts are annual.

The third and fourth sections of Table One are an abbreviated Strength Weakness Opportunity and Threat (SWOT) matrix. The internal rating is for the skill set that the EIERA has today and it is recognized that the Authority has within its control to develop the expertise to change this rating. A significant effort was expended to identify what the opportunities and threats may be for the Authority. The external factors are dependent upon emerging technologies, federal and state actions, and state political boundaries, as they exist today. The assigned probability is a culmination of the review.

Table One: Possible Business Line Comparison of Success Probability and Revenue Potential					
Proposed Business Lines	Alternative One - Energy Efficiency	Alternative Two - Storm Water	Alternative Three - Nutrient Trading	Alternative Four - Solid Waste	Alternative Five - Rural Assistance
Revenue Stream Start Date	Probability of the time frame that the Authority will start to generate revenue				
12 to 18 Months -Potential Revenue	Medium \$144,000	Medium \$144,000	Medium \$288,800	Low \$0	Low \$0
18 to 48 Months -Potential Revenue	Medium \$397,932	High \$436,188	Medium \$288,800	Low \$0	Medium \$175,781
Greater than 48 Months - Potential Revenue	High \$397,932	Very High \$616,406	Medium \$228,800	Medium \$128,125	Very High \$703,125
By Revenue Source	Probability of source from which the Authority will earn revenue				
Fee for Service Probability	Medium \$144,000	Medium \$144,000	Medium \$288,800	Very Low \$0	Low \$0
Federal Fee for Service Probability	Low \$114,400	Low \$0	Low \$228,800	Low \$0	Low \$0
Grants- Probability	Too Speculative \$0	Too Speculative \$0	Too Speculative \$0	Too Speculative \$0	Too Speculative \$0
Debt Financing- Probability	High \$169,132	Very High \$616,406	High \$40,000	Medium \$128,125	Very High \$128,125
Consulting- Probability	Low \$0	Low \$0	Medium \$100,000	Low \$0	Low \$0
Internal Skill Set	Authority's current skill set to develop the business line				
Strengths	Low	High	Medium	Medium	Very Low
External Factors	Opportunities and threats not directly within Authority control				
Opportunity	Medium	Very High	Very High	High	High
Threats	High	Very Low	Low	Very High	High

Business Line Ranking

Table Two adds a cardinal scale to the probability rankings, where a 1 is Very Low to 5 Very Strong, so that the business lines can be ranked across the different categories. Business Line Two, Stormwater earns 35 points under this ranking scheme and emerges as the highest ranked alternative. The second highest ranked alternative is Business Line Three, Nutrient Trading.

Table One pairs the potential revenue identified with the probability of generating the revenue. Table Two provides a quantitative estimate of the probabilities in Table One. The probability is based on a number of factors that include the identified opportunities and barriers, political climate and amount of market education required both internally and externally.

Table Two: Business Line Ranking by Probabilities					
Proposed Business Lines	Alternative One - Energy Efficiency	Alternative Two - Storm Water	Alternative Three - Nutrient Trading	Alternative Four - Solid Waste	Alternative Five - Rural Assistance
Revenue Stream Start Date	Probability of the time frame that the Authority will start to generate revenue				
12 to 18 Months - Probability of Revenue	3	3	3	2	2
18 to 48 Months - Probability of Revenue	3	4	3	2	3
Greater than 48 Months - Probability of Revenue	4	5	3	3	5
By Revenue Source	Probability of source from which the Authority will earn revenue				
Fee for Service - Probability	3	3	3	1	2
Federal Fee for Service - Probability	2	2	2	2	2
Grants- Probability	3	2	3	3	3
Debt Financing- Probability	4	5	4	4	5
Consulting- Probability	2	2	3	2	2
Internal Skill Set	Identified Authority's current skill set to develop the business line				
Strengths - Weaknesses	2	4	3	3	1
External Factors	Identified Opportunities and Threats Not Directly Within Authority Control				
Opportunity	3	5	5	4	4
Threats	-4	-1	-2	-5	-4
Total Points	25	34	30	21	25
Legend	Very Weak=1	Weak = 2	Medium= 3	Strong = 4	Very Strong=5

The following narrative provides a discussion of each business line including an overview of potential revenue, opportunities and barriers. It is important to note that while each line offers revenue potential, it is the external threats that define the actual viability of the business lines for EIERA.

Top Ranked Business Line: Storm Water

Overview

The increased focus on storm water runoff and pending changes to NPDES MS4 permits creates an opportunity for the Authority to develop this business line. The Authority may work in partnership with DNR to assist with the outreach and education on what the new regulations and green infrastructure mean for communities. Under this scenario the Authority becomes a leading resource for communities and a natural conduit to finance infrastructure. Additionally, EPA consent decrees provide an opportunity for the Authority to assist the larger communities in Missouri with reducing their financing costs. Finally, there will be opportunities to provide financing to Phase II MS4 permit holders and in particular private developers.

Revenue Opportunities

Near term revenue opportunities could include a contract with DNR or a federal agency to educate and assist communities in developing financial strategies for significant improvements in their receiving waters. There is significant outreach necessary to achieve the elusive goal of improving surface water quality. There exists a unique opportunity to work with Kansas City and St. Louis both on the programing elements of their federal consent decree but also to develop a financing package that will reduce their interest costs. It is the two consent decrees that are the driver for the high probability that the Authority will earn fees under this scenario. The green infrastructure initiative will require innovative financing solutions, which the Authority may take the lead. While this aspect of the stormwater business line may not generate significant debt fees, it has the greatest potential for reducing the cost of stormwater management to Missouri's cities and communities.

External Factors

The fact that this business line derives from EPA and DNR goals reduces the threat of other political jurisdictions blocking entry into this market. The threats to this market include the ability of DNR and the Authority being able to develop a financing package that meets all parties' expectations. Additionally, EPA actions are another significant threat to the short-term generation of revenue. The delay in the new MS-4 rules and EPS's indecision on whether to fully embrace surface water quality management plans (SWQMP) will delay communities willingness to embrace new infrastructure.

One of the challenges with green infrastructureⁱ is that projects are typically small and feature a mix of public and private ownership. Developing bonding alternatives may be problematic. It may be that this is an area where consulting fees become a

possibility to assist communities with developing their ordinances and financing their plans through local incentives.

Stormwater management will continue to be an issue well beyond the time line of this study. This business line has the opportunity to become a staple of the Authority as states figure out how to meet the MS-4 regulations.

Second Ranked Business Line: Statewide Program Manager for Nutrient Trading

Overview

The poor performance of the 319 program nationallyⁱⁱ provides an opportunity for developing a regional nutrient trading program. The Mississippi and Missouri Rivers provide a large enough watershed for the program to have sufficient numbers of traders.

There is market opportunity for an agency to take the lead within Missouri and the region to develop a market-based strategy to improve surface water quality. There are two aspects to this opportunity. The first is developing a market that fits the values, needs, and goals of the state and region. Second, stakeholders may wish to finance an upgrade of their infrastructure to take advantage of the nutrient trading revenue opportunity creating an additional financing opportunity for the Authority.

Revenue Opportunities

This model estimates only contract or fee based revenue with the possibility of receiving funds and consulting from adjoining states. Outside of the five-year time horizon the opportunity for fees from bond issuance will increase. This business line has the potential to have a significant budget from the federal government with the proper strategy. The impaired water of the Mississippi and the Gulf of Mexico is on the same scale as the Chesapeake Bay and Puget Sound surface water quality efforts. Missouri is geographically situated to become a major player in a multistate initiative and this business line has long term potential that is less dependent on technological changes allowing the private sector to meet the market demand.

External Factors

As an infant market there is a possibility that the concept never matures. However, the compelling need for new approaches to surface water quality management other than imposing all the costs of point source polluters will be created. There are threats to this business line but they are different in important ways to business line alternatives One, Four and Five. These three business lines already have established entities with over lapping missions. This business line is largely a blank slate and its success will be dependent upon the creativity, innovation, and political mastery of

the lead agency. While difficult to predict the ultimate shape of how EPA will ultimately deal with surface water quality, it is the author's belief that this business line alternative has the potential to provide long-term revenues for the Authority.

Third Ranked Business Line: Energy Efficiency

Overview

Missouri's current energy efficiency programs are under performing relative to other states. This provides an opportunity for the Authority to develop financing programs that increase the pace of improving the energy efficiency of the state's aging housing stock. The long-term economic factors all point towards energy efficiency becoming a larger tool in meeting future U.S. energy needs. This implies that the revenue potential for financing energy efficiency as a generation alternative will be sustained.

Revenue Opportunities

There are a number of initiatives to help residential customers improve their homes' energy efficiency, fewer for commercial ventures. One of the barriers to accessing the programs is simply the time required to figure out which opportunity will save money. Additionally, there is a state mandated initiative, SB 376, for investor owned utilities but this mandate did not include the 87 public utilities and rural cooperatives creating an opportunity to assist these segments of the power market. This business line is estimated to have a market potential for the Authority of up to \$400,000 annually within the short to medium time horizon.

External Factors

While a significant market need exists, there are also a number of threats to successful implementation of the energy efficiency business line. The power market is a mature community with its own regulatory processes that may not easily admit new players into their community, creating considerable barriers to entry.

Additionally, long-term power purchase contracts' penalty clauses offset any cost savings to customers if energy efficiency efforts make a significant impact on utilities' power requirements.

While the financial opportunity is significant the threats are also significant, earning this business line the third place ranking. The long established political and economic interests might block the Authority's entrance into this market reducing the revenue potential to medium. The longer-term outlook has the probability growing as it is assumed that the Authority will develop relationships that will increase financing opportunities. There is a potential structural barrier to the revenue potential of this business line as well.

Fourth Ranked Business Line: Statewide Financing for Rural Areas and Small Towns

Overview

This business line primarily focuses on distributive energyⁱⁱⁱ as a way to meet the goal of supporting rural economic development. The combined heat and power facilities (CHP) on farms and community sewer plants can provide a needed income stream to the farmers as well as reduced operating costs. Additionally, there is a need for developing more bio-digesters for animal husbandry operations as well as municipalities. Both types of plants also provide much needed tax base to rural counties. These types of projects also create a secondary economic impact through the maintenance of operation of the facilities that translate to jobs and income. There are significant threats to a successful implementation of this business line. However the threats do not diminish the market need for rural economic development through distributive generation. If the structural barriers can be overcome, there is likely to be pent up demand for significant amounts of economically viable infrastructure that will need to be financed.

Revenue Opportunities

It is estimated that there are 150 hog farms and 50 dairies that may be economically viable for this technology. Additionally, the national wind generation industry has achieved economies of scale that make it competitive relative to avoided costs of new natural gas and coal plants. It is estimated that there is sufficient wind in Missouri to generate 275,000 MWs for the state. Farms in windy locations such as the NW region of the state have an opportunity to increase their income through leasing sites for the generators. Finally, there are also opportunities to increase the number of bio digesters on farms. This increases methane production that can be used to power equipment or heat buildings, creating energy independence for farms. The amount of financing potential in the market is significant. There are 225 communities in Missouri that may benefit from a combined heat and power plant and, assuming 10 loans per year are bonded, has the potential of generating up to \$450,000 in fees. Additionally, if the Authority is able to capture ½ of one percent of the potential wind generation financing requirements annually there is the potential for an additional \$250,000 annually in bond fees.

External Factors

The increasing costs of upgrading transmission lines will keep the demand for distributive power a viable option to meet electrical load. There are, however, structural barriers that may present significant threats to this business line. It is the structural barriers that limit the revenue probability and why there is no service fee or contract. Having said this, there is an emerging USDA initiative that the Authority may be able to find interim funding to develop this program. However, close coordination with MDED will be required. The two programs, MDED and Authority

are just different enough that a partnership is possible. There are structural barriers as well to the successful implementation of this business line. Much of the rural power grid is still single phase, prohibiting pushing generation onto the grid and limiting the location that CHP technology can be used. Additionally, the logical purchasers of this generation may be constrained from purchasing this power by long-term purchase power agreements. Finally, there are a number of jurisdictional authorities that have the power to thwart the Authority's entrance. Also, as with energy efficiency, this business line may require clarification through statutory reform.

Fifth Ranked Business Line: Bonding Bank for Solid Waste

Overview

The rapid increase in national compressed natural gas (CNG) production provides an economic opportunity for the Authority to help solid waste districts convert waste haulers' trucks, which in turn can create a demand for methane recovery facilities at solid waste sites. Additionally, the I-70 corridor through Missouri is a heavily traveled truck corridor creating an opportunity to develop CNG facilities along the corridor and a market for the solid waste recovery facilities. Should there be a national policy for creating a flex fuel network nation wide, Missouri is well positioned to participate in this initiative and would change the revenue potential for this business line. The federal climate makes it difficult if not impossible to predict if this will become a national priority. There are additional significant threats to this business line. It is the significant threats not lack of need that weighted this business line last.

Revenue Opportunities

This study did not identify any revenue opportunities without significant threats to the business line. The probability of success is low enough that providing a market potential would be purely speculative.

External Factors

The threats to this business line are both economic and political. The political threats come from both the public and private sectors. In the public sector, the solid waste districts are well-established political entities that may perceive the Authority as a political threat to their sovereignty. The private sector may well be able to finance most of the projects privately. The explosion of CNG production has created a significant price difference between diesel and CNG making capital conversion economically feasible and it may be that the market will create the necessary demand to convert equipment and build facilities. The private sector is already undertaking the development of CNG fueling stations and conversion of their fleets to CNG, and could see a public sector entrant as a competitive threat.

Model Assumptions

This study makes a number of assumptions to estimate potential revenues.

1. The state fee revenue is predicated on how closely aligned the business line is with DNR's. The first two business lines are closely aligned and are assigned the same dollar amount. The third business line is higher because there is a low probability of the Authority earning fees from debt financing. If DNR or EPA finds merit in this initiative one of the agencies will need to commit the resources to design and build a market. This will require more resources than the outreach and technical assistance for the first two business lines. The fourth business line does not have a fee assigned. It is unclear at this point how closely aligned are the goals of the Solid Waste District and EIERA's MDP program.
2. The dollar value for the state fees ranging from \$144K to \$288K was calculated as a fully loaded FTE, and as a fully loaded FTE plus covering the Authorities current general and administrative costs.
3. Debt financing fees are all calculated using the Authority's fee schedule. The level of bond issuance is determined differently for each business line.
4. The majority of bond issuance for the energy efficiency business line is based on Ameren's projected per megawatt hour cost applied to the public utility sector. The penetration rate assumes only energy efficiency projects with a 2-year payback, about 2 percent of residential consumption. For further discussion see pages XX of the main report.
5. The bond issuance fees for stormwater are rated very high because of the anticipated EPA rules for stormwater management. There are three primary sources of these fees. It is assumed that the Authority and DNR can develop a financing package to fund Kansas City and St. Louis federal consent decree mandates.
6. Currently there are over 140 permit holders in the state. The model assumes there will be \$60M annually in sewer plant upgrades. This value is based on an average of 2 sewer plants, about 1.5 percent of the permit holders that will annually upgrade to capture phosphates and nitrogen. Finally, there is an assumption that the Authority will be able to bundle up to \$30M in green infrastructure projects that are both public and private. For further discussion see pages XX of the main report.
7. Within the five-year window it is not anticipated that there will be any bond issuance for nutrient trading. The longer-term outlook is that there would be substantial opportunities for bond financing as the market develops. For further discussion see pages XX of the main report.
8. The solid waste business line has the potential to issue bonds because methane and natural gas production have a market in Missouri. There is a significant opportunity for Missouri to increase its energy production through methane extraction plants as well as pumping stations, truck fleet conversions, and pipelines that all may be constructed within the next 20 years. It may be that the private sector will be able to finance a good portion of this market because of the

price spread between gas and diesel. However the identified barriers and private market potential make this market very difficult to get a preliminary market potential for the Authority established.

9. Rural assistance debt financing is rated very high within the five year planning horizon. It is assumed that the Authority can capture up to 2 percent annually of the current potential demand for agriculture cogeneration demand and one half of one percent of the wind generation potential in Missouri. For further discussion see pages XX of the main report.
10. It was assumed that the Authority would receive an annual contract either through the appropriate state or the federal agency. It is possible that it may be a combination of sources for program revenue.
11. This study does not contemplate any grant revenues. The political atmosphere is such that it may be a number of years before environmental funding is restored to prior levels. There are currently opportunities through USDA and DOE. The Authority would need to insure that seeking grants through these agencies is compatible with other state agencies that utilize these resources.
12. There may be opportunities to generate consulting fees. However, the staffing constraint to not exceed eight employees restricts this activity as a substantial net revenue generator for the Authority. It was assumed that the consulting that may occur would be contracted and therefore only a modest portion would flow to the Authority or general and administrative costs. The exception is the nutrient trading business line. Revenues were projected in this business line that would flow from other states to assist in the development of a multistate compact.

Business Line Implementation - Next Steps

The next step is the development phase of the business line(s), which is beyond the scope of this report. This analysis should include an in depth review of state statutes and Authority rules to insure the report's recommendations have not strayed beyond the Authority's established side boards. In addition, each new or enhanced opportunity will require a business plan that develops the organizational deployment of resources to achieve the stated goals. Broadly, a business plan would include the following:

- Market research (including needs, trends, and social marketing and media opportunities),
- Business strategy,
- Management and organizational structure assessment, and
- Financial plan and break-even analysis.

ⁱ Green infrastructure is a general term to describe several technologies that strive to either keep stormwater on site, use ecological processes, or a combination to keep stormwater out of surface water.

ⁱⁱ GAO, 2012, Greater Oversight and Additional Data Needed for Key EPA Water Program, Highlights of GAO 12-335. The 319 EPA grant program administered through DNR is for surface water quality and watershed management projects.

ⁱⁱⁱ Distributive energy is generally defined as small generation facilities often serving two purposes, such as heating and power generation or processing waste into fertilizer and power generation. Distributive power can also mean small generation plants spread across a transmission distribution system that balances the load so as to avoid the cost of increasing the power line capacity.

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activity is less than the cost of pollution reduction from the point source. Nitrogen and phosphates are the two pollutants targeted in this business line. Turbidity and water temperature can also be incorporated into a water quality-trading scheme depending on local watershed characteristics. A number of states are looking at this tool to assist them in managing their surface water quality. The adjacent chart shows the states' progress in developing nutrient trading programs.

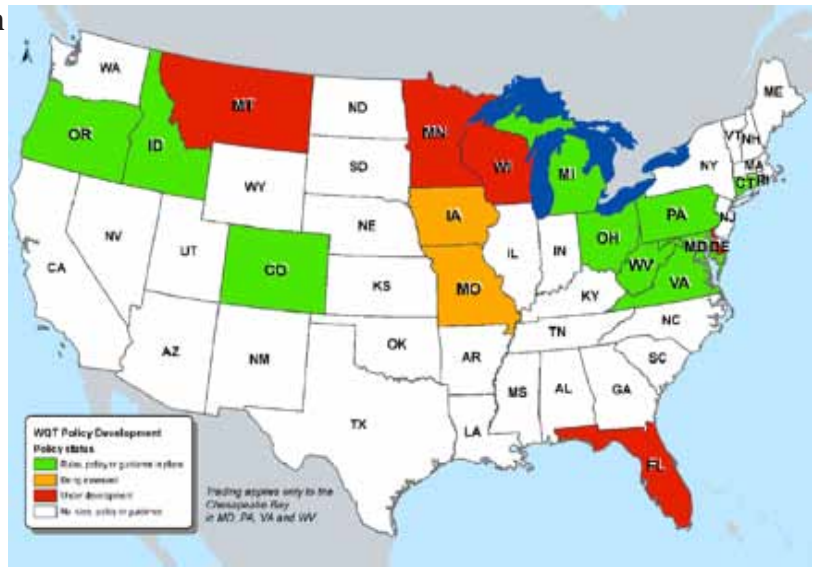


Figure 2 States Working on Nutrient Trading

Chesapeake Bay states (MD, PA, and VA) have either pilot or active trading programs. Green denotes the states that have rules and regulations written. Red denotes those states that are developing rules. And Orange denotes states that have nutrient trading under consideration.³

Ohio is set to launch a pilot water quality trading program in late 2012 to 2014 to protect the Ohio River Basin. Ohio is unique in that three states are collaborating on setting up a nutrient trading market for the Ohio River. Finally, individual watershed projects within states also exist. As this is an emerging market, there is a lot of experimentation with different models. However, there are several commonalities among successful markets. First, programs should focus on an impaired watershed for which there is a TMDL. Second, the market requires buy-in by stakeholders. In discussions with program managers, this step should not be underestimated in terms of time and effort. Third, the program must have sufficient buyers and sellers. This is a complex market defining process and one of the areas where a great diversity of stakeholders exists. In Ohio and Idaho, it is the electric utilities that are the driving force. In Connecticut, (CT) it is the Department of Environmental Protection (DEP) working to find a solution to fund point source polluters to meet the Long Island Sound consent decree. In Chesapeake Bay states and Oregon, they are working to pair non-point polluters with point source polluters to reduce nutrient pollution.

The foundation for all environmental attribute trading markets is well established in economics and law. These markets have successfully been implemented for wetlands⁴ and air pollution. The concept has also been used in housing density trading markets for shaping urban growth. When considering nutrient trading, it has to have certain characteristics. The market is limited by the watershed boundary. It must have clear enforceable rules for contracts, managing auctions, monitoring, establishing best management practices, and a method for quantification. Other lessons critical to success include developing the “champions” for the program. These champions may be a coalition, an investor owned utility that has a thermal discharge issue, agricultural interests that understand the programs offer farmers a new revenue source, or a city operating under a NPDES consent decree. These champions become the foundation for educating elected officials as to the benefits of such a program. Identifying and developing strategic partnerships with champions is a necessary condition for a successful program.

The focus groups' reticence in supporting this business line is not misplaced. The development of a nutrient trading program is a political as well as a regulatory process. It will take considerable investment in time and resources to create a successful system. And, there are a number of points along the way where the process can be derailed. However, the economics are simply too compelling to ignore this tool as a potential mechanism to solve the financial crisis facing point source polluters.

Focus Group Opinion On Nutrient Trading Program

"I actually put the phosphate market as number two because what I was looking at is which of these things have the biggest negative impact on the environment?"

"Timeline involved ... it says that in the recap that it would take years and years and years and I just think there's a lot of potential to end up without any measurable results at the end of the day" Focus Group Participants

The nutrient trading market was the least understood of the five business lines. The participants were experienced enough to recognize that implementing this type of business line faces political challenges and years of education without any guarantee of a revenue stream. The participants who are directly involved in surface water quality management also know that restoring impaired surface water requires engaging nonpoint source polluters.

Market Potential

This business line is complementary to the stormwater business line. As the financier of stormwater green infrastructure, by necessity the Authority will have to become an expert on these practices. The advantage the Authority has to offer DNR is the independence from the compliance agencies. Compliance agencies are unable to offer the kind of flexibility in working through non-compliance issues that the Authority is able to. This provides a level of confidence between the parties to work through knotty issues. This business line has the potential to start in the very near term if DNR desires to fund the development of a market-trading program. It is difficult to predict how long before the state is ready to begin building a market. The actual market operation is several years away. Once the trading model has been selected and stakeholders on board, there is a value added revenue source depending upon the market model selected. The role of the Authority and the available revenue source will be dependent on the model chosen. If a version of the CT model is chosen, there is a larger role for the Authority as Connecticut's Department of Environmental Protection leverages the CWSRF funds to facilitate the nutrient trading as well as incentivizing upgrades to point source facilities. This is a natural fit for the Authority's traditional activities. A compelling motivation for developing a nutrient trading market in Missouri is the consent decrees on Kansas City and St. Louis. Ameliorating their costs of compliance has economic implications for the state.

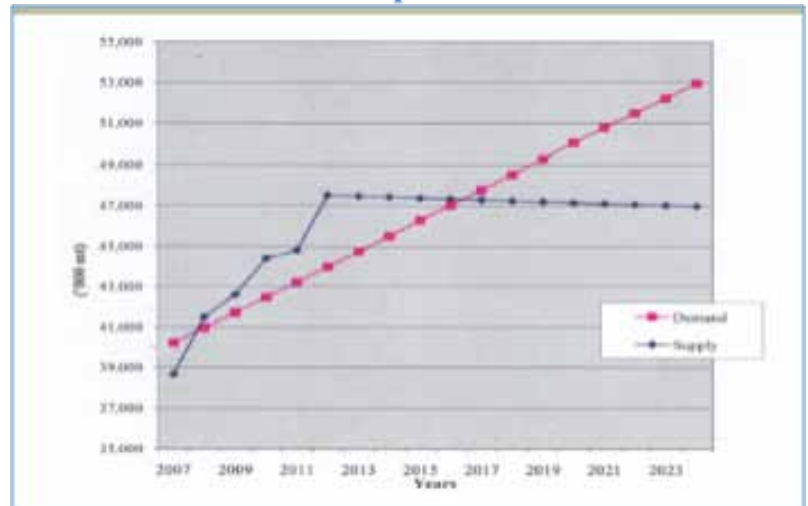
Most credit trading programs today are not self-sustaining and are subsidized through the SRF program or state appropriation. This is a policy issue and an artifact of government policy not fully exploiting the market. There is a trade off between control and revenue. If the market rules are designed to fully define the property rights and responsibilities government's role is reduced to enforcing the property rights and the probability of a sustainable market increases.

Today, it appears that there is sufficient spread between avoided cost and market value to create a healthy market. The avoided cost of operating the registry and auction part of the business

line appears to be around \$5.0⁵ per pound. And, the avoided capital cost of polluters may be substantially higher than the \$5.40. The avoided cost of non-point polluters may be closer to \$2.75.⁶ This suggests there is sufficient spread between the buyers and sellers to cover operating costs that could be as high as \$3.00 per nutrient credit. The remaining aspect of creating a market after defining the property rights and determining sufficient spread between seller's costs and buyers' avoided costs is developing sufficient number of traders within a watershed. The larger watershed the greater the probability that an efficient market will emerge. The fact that two of the most significant watersheds flow through Missouri, the state is in an ideal position to create the largest nutrient trading market in the U.S.

There are potential technological advances that could significantly change the phosphorus market. On the adjacent graph, the red line is the demand for phosphorus and the blue line is the projected supply of phosphorus and the cross over point is expected to occur during 2013. If this analysis is correct, the market can expect prices to begin to rise, which will restrict demand. Today, there are several firms marketing lease options to purchase agreements to install struvite extraction technologies in sanitary sewer plants.⁷ The firms finance the technology to extract struvite from the wastewater stream and provide a revenue sharing plan for the sale of the fertilizer until the firm has recovered a required rate of return on the capital and the equipment ownership is transferred to the municipality.

Figure 3: World Market Demand for Phosphorus



Additionally, increasing climate variability can introduce instability and uncertainty into the market. Instability makes it difficult to create an efficient auction, which can reduce the number of participants in a market. This issue is just emerging and it is unclear how substantial a problem it may become.

Findings and Recommendations

Should the Authority decide to pursue this business line, it will be a long term strategic decision

1. The Authority should start discussions with MDNR if this is an initiative that they would support.

The GAO report on the 319 program performance and the larger issue of cleaning up impaired surface waters will require a new way of thinking.

2. The Authority should start discussions with EPA about the level of support they would provide for a multistate compact to address both the Mississippi River and Gulf of Mexico.

This is a case where the solution may be by making the focus area larger. With Ohio leading the way there is a real opportunity for a long-term project to develop a market solution for these impaired water bodies.

3. The Authority should continue to research and analyze this emerging market potential

University of Maryland EFC has been working on this issue for a number of years and may be a good resource to continue this work.

Revenue Model

This review found that there are multiple public and private goals being met through nutrient trading programs. Revenue models vary widely. CT has strived for a self-sufficient program that trades nitrogen credits at \$5.40. Pennsylvania prices non-point polluters' avoided cost of \$2.75 per pound. CT set the auction price based on the sellers' prior year cost of operation. Which model is chosen will greatly impact the revenue forecast. As the market matures, there is also the potential for generating substantial revenues from registry fees. For example, if Ohio is successful in attracting 50% of the total number of farms, 120K, a registry fee of \$10 annually generates \$1.2M. As outlined in Table Nine, once the nutrient trading program achieves an annual market of 60K credits and 10K participants the numbers hold and the model is sustainable.

The revenue potential is based on several assumptions. The first revenue line is based on creating a partnership with DNR to create a nutrient trading program. It will be necessary to fund a sustained effort to develop the market. There are a number of avenues for establishing a fee; that is best discussed with DNR. This model assumes that once the program is operating, a combination of registration fees and price spreads will cover direct costs of managing the program. The final assumption is that there will be watersheds where nutrient trading is not feasible and new technologies will be required that creates an opportunity for the Authority to issue bonds. The largest market potential of this business line occurs with a multistate compact. Farms may well determine in flood prone areas to become nutrient traps and selling the credits to upstream polluters as a business plan. There are a myriad of derivative businesses such as wildlife preserves hunting reserves and recreational activities

Table Nine: Pro Forma Revenue Alternative Business Line Three Nutrient Trading			
	12 to 18 Months	18 to 48 Months	Greater than 48 Months
Technical Assistance Fee	\$288,800	\$288,800	\$428,800
Program Management	\$0	\$0	\$100,000
Financing New Technologies	\$0	\$0	\$40,000
ANNUAL TOTAL	\$288,800	\$288,800	\$428,800

Conclusion

Nutrient trading markets represent a viable strategy in meeting significant water bodies' consent decrees. They address the problem that non-point polluters operate under different rules than point source. They are a market solution that develops a partnership between regulators, and the public and private sectors. Nutrient trading programs utilize the market mechanism to increase the cost efficiency of reducing nutrients. And, there are several distinct models to choose from so that Missouri does not have to "reinvent the wheel."

There are a number of risks in pursuing this business line ranging from political challenges of creating the stakeholder groups to technological changes that could undercut the market. Additionally, the increasing weather variability could destabilize the market making efficient operation problematic. Finally, there is the potential that technologies will emerge that create new markets that will compete directly with the trading market.

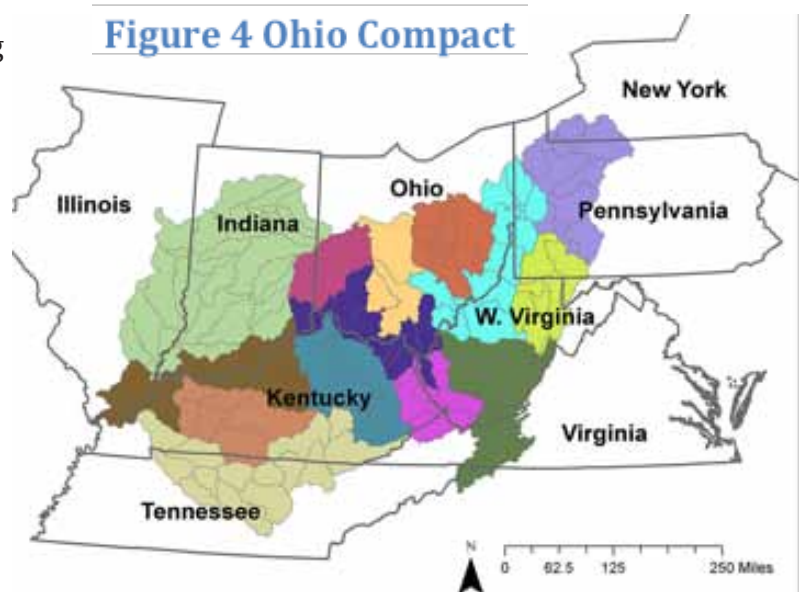
NUTRIENT TRADING PROGRAM - CASE STUDIES

Ohio: Multistate Nutrient Trading Program.

Three states - Ohio, Indiana and Kentucky - have entered into an agreement to mutually manage the Ohio River's phosphorus and nitrogen load in the most cost efficient manner. Each state will implement pilot projects between 2012 and 2015. While a number of states have established rules to govern trading, this is the first multi-state effort to regulate interstate trading that operates under the same rules.

The Electric Power Research Institute (EPRI) is leading the research effort in partnership with American Farmland Trust, Hunton & Williams and the University of California. They are funded through the State Farm Bureau Federation, the Ohio River Valley Sanitary Commission, USEPA, and USDA's Natural Resources Conservation Service and several electric companies.

The coalition of electric companies and agricultural stakeholders make up the market. The watershed contains over 30 farms covering 200K acres, and six power plants. It is expected that the trading system will remove approximately 45K pounds of nitrogen and 15K pounds of phosphorus annually. Planners hope that the project will eventually include eight states, 46 power plants, thousands of wastewater facilities, and up to 230K farmers.



PENNVEST: Nutrient Trading Program:

The PENNVEST Nutrient Credit Trading Program, run in conjunction with the Pennsylvania Department of Environmental Protection (DEP), allows for the sale and purchase of nutrient credits. Currently, this program is limited to the Susquehanna and Potomac watersheds (Chesapeake Bay). This program is designed for point source polluters to purchase and sell credits to meet their nitrogen and phosphorous discharge limits for the compliance year.

PENNVEST oversees the management of the program; however, the day-to-day management of the registry and auctions is by a private firm, Markit, which handles enrollment services, the collection of bids, and the facilitation of the auction.⁸

There are two types of auctions under the Pennvest Nutrient Credit Trading Program: 1) forward auctions for multiyear delivery for credits that are not yet certified; and, 2) spot auctions at the end of the compliance year (Oct-Nov). Every year the program is audited for fraud or discrepancies. Over the program's eight-year history there has been no reported fraud.

Other programs also exist in PA. The wastewater treatment facility in Lancaster County uses a trading program as a means of complying with nutrient limits more cost-effectively while using credits generated locally. The borough invested \$2.9M to upgrade its treatment plant and partnered with a local farmer, who will generate credits by converting more than 900 acres to

continuous no-till agriculture. Mount Joy reduced its annual projected cost for nutrient treatment from \$382K per year to \$248K per year, a 35% reduction.

Connecticut Long Island Sound Program:

In 2001, the Connecticut General Assembly passed legislation establishing the Nitrogen Credit Exchange Program for the Long Island Sound. The goal, in coordination with the USEPA and New York State Department of Environmental Conservation (NYSDEC), was to reduce nitrogen production by 58.5% discharge into Long Island Sound.

Seventy-nine Publicly Owned Treatment Works (POTWs) are subject to guidelines for passage of a nitrogen discharge permit, which limits how much nitrogen they can produce in a year. The permit also indicates that these POTWs have to monitor how much nitrogen they produce weekly and have the facilities to do so. If one or more of these POTWs exceed their annual nitrogen discharge limit, they must purchase credits to bring them into compliance. By the same token, if a POTW does not produce as much nitrogen as allotted annually, they can sell their credits to other POTWs. POTWs can purchase credits either from each other or the Connecticut Department of Environmental Quality. Below is a list of achievements for the program from 2000-2003.

- Each of the 79 POTWs listed under the General Permit cooperated in implementing the Nitrogen Credit Exchange program.
- During 2002, Connecticut POTWs discharged an average of 15,840 pounds of nitrogen per day, which is 13% less than was projected.
- The CWSRF financed nitrogen removal projects to create the credits. The facilities with completed projects removed 2,861,852 pounds of nitrogen in 2002. The combined capital, operation and maintenance costs were \$4,709,445. By 2004 the trading program became self-sufficient.
- 38 POTWs purchased nitrogen credits at a cost of \$1,317,223. Thirty-nine sold credits they generated for a value of \$2,757,323. When a surplus existed, the remaining credits were purchased by the CWSRF for \$1.4M. By 2004, the state no longer had to purchase surplus credits. This is the strategy used to stabilize the market. Today because of weather the reverse problem exists: demand for credits exceeds the supply.

Oregon Freshwater Trust (OFWT):

The Oregon's Water Quality Program (OFWT), is in response to the Federal CWA and state law, which sets TMDLs on Oregon's rivers. Water quality trading credits have been established for several large scale restoration projects, with offset ratios that offer the potential for real gain in reducing nutrients.

OFWT, working cooperatively with other organizations, has been able to establish the standards necessary to calculate and quantify the ecosystem services nature provides into "units of good" or credits that can be traded and purchased. Individuals, property owners, businesses, public utility companies and developers can all participate in the system through restoration auctions.

In OR, the credits are calculated by "units of good." For example, a unit of good could be dropping river stream temperature, planting trees along a riverbank or other beneficial environmental activity. These "units of good" have been specifically designed to meet the TMDLs. Following is an example of how OR's approach works.

- Non-profits like The Freshwater Trust use private dollars to pay for the upfront costs to recruit local restoration professionals to implement tree-planting projects upstream, generally on private agricultural land.
- The eventual cooling benefits of the planted trees are calculated using rigorous standards approved by the Oregon Department of Environmental Quality and then translated into credits.
- A third-party verifies the validity of the credits that are then certified and registered on an official registry.
- A wastewater treatment facility purchases the credits to offset their environmental impacts and meet their compliance obligations – and generally do so at a two-to-one ratio, assuring an overall environmental benefit. The landowners who planted trees on their land are paid for converting land to conservation use, and the non-profit's initial investment in the project is returned.
- Projects are maintained and monitored annually to ensure the sites are performing as intended by the OFWT.
- Oregon's program mixes philanthropy, environmental protection (federal, state, and regulatory) and private enterprises into a market system.

NC Tar Pamlico Nutrient Trading Program:

This program is not a normal nutrient trading program in that it uses a Coasian property right model where if a point source polluter violates its NPDES it pays into a fund that deploys BMPs to farmers, or it can develop offset nutrient reduction projects. In the late 1980's, the Pamlico River estuary had excessive nutrients creating low oxygen levels and excessive fish kills. To combat this issue, the NC Environmental Management Commission (EMC) set up a nutrient strategy for the basin in 1989. In 1994, EMC had established the TMDLs and called for a 30% reduction goal for nitrogen loading from 1991 levels and holding phosphorus loading to 1991 levels. The state of NC offers two such trading programs.

- The first program, in its third phase, calls for the Association that includes over 98% of the waste water dischargers in the basin to either reduce their nutrient loading to the estuary or, if they exceed an annual collective loading cap, to fund agricultural Best Management Practices (BMPs) through the state's existing Agriculture Cost Share Program.
- A second form of trading in the Tar-Pamlico occurs between nonpoint sources through the purchase of off-site nutrient offset credits by developers from third-party providers to achieve storm water runoff loading requirements on their development projects. The option of purchasing these nutrient credits allows developers more flexibility in meeting the runoff requirements of their project while insuring that nutrient loads to the estuary do not increase.

NC Neuse River Basin Program:

The Neuse River Basin Program shares many similarities with the Tar Pamlico Basin Program. In 1993, the North Carolina Division of Water Quality introduced a management plan for the basin that recommended an accelerated schedule to reduce nitrogen from point and nonpoint sources. Adopting a two-tiered nutrient trading program, as in the Tar Pamlico Basin, the emergency management plan called for a mandatory 30% reduction in nitrogen from point, urban, and rural sources by 2003. The EMC worked with the appropriate nonpoint source agencies to target the implementation of BMPs to reduce sediment and nutrient runoff throughout the basin. Between 1996 and 2003, half of the croplands enrolled in the program implemented BMPs such as buffers, contour planting, no-till planting, and creek fencing.

According to the EPA, “2003 showed that the Neuse agricultural community achieved a 42 percent nitrogen reduction, exceeding the 30 percent goal set by the EMC and Neuse River TMDL.” Furthermore, “Using flow-adjusted nitrogen concentrations, long-term nutrient data show a 27 percent in stream nitrogen reduction in 2003 as compared to the average flow-adjusted concentrations from the 1991 to 1995 baseline.”⁹

This decrease was accomplished by several means: 1) installing BMP’s; 2) implementing fertilizer management plans; and, 3) removing cropland from production. According to data provided by the EPA, these practices saved over 480K tons of soil from erosion.

Maryland’s Nutrient Trading Program:

In 2006, Maryland’s Department of Agriculture announced its Nutrient Trading Program. It launched Phase I in 2007 and Phase II in 2008.

Phase 1 (Point Source Trading Policy) calls for all new and expanded point nutrient source nutrient loads to be off-set and requires all trades to be consistent with local and county sewage plans. However, unlike other states’ programs, facility upgrades cannot count towards their TMDLs. These Point Source trades are implemented and enforced via NPDES permits. Trading targets the Potomac basin and the Patuxent basin watersheds. Wastewater Treatment Plants (WTPs) buy/create enough credits for 10 years through the Maryland Department of Agriculture. Credits can be created in a variety of ways.

- These include upgrading an existing minor wastewater treatment plant to BNR (Biological Nutrient Removal) or ENR status.
- A facility may opt to have land application of wastewater with pretreatment and nutrient management controls.
- An existing wastewater plant can be retired and have its flow sent to a BNR or ENR facility or an existing Onsite Sewage Disposal System (OSDS) can be retired by the connection to public sewer or cluster treatment.
- ENR facilities may generate point source discharge credits by reducing effluent concentration or maintaining flow at less than the design flow basis of the waste load allocation.

Phase II (Non-Point Source Trading) is designed to incorporate agriculture. This part of the program has two basic parts.

- Before credits can be bought, baseline requirements must be met for agricultural interests. Credits can also be produced through certain land use: 1) Crop conversions 2) agronomic practices (cover crops, reduced fertilizer application, and manure export); and, 3) structural BMPs (riparian buffers, livestock fencing, etc.). Creation of credits will only be recorded after a technical review approves them and they are found to comply with USDA/ NRCS specifications. Also, they must be functioning and operating as approved. Lastly, all reductions must result in a net decrease in nutrient loads entering the water and be consistent with Phase II trading policy requiring a 10% retirement ratio.
- Exchange of Agricultural Nonpoint Credits: Participation requires using a web-based nutrient trading application tool to calculate baseline eligibility and credit potential. Once credits have been certified and approved, they can be posted to the Maryland Nutrient Trading Program’s Marketplace.

Virginia Nutrient Trading Program:

Along with the states of Virginia, Pennsylvania, Maryland, and DC, the EPA and the Chesapeake Bay Commission have adopted a nutrient trading program. Virginia's State Water Control Board has designated the areas of the Shenandoah-Potomac Rivers, Rappahannock, River, Eastern Shore, York River and James River, to be governed by rules for point source dischargers. The Virginia DEQ is responsible for administering the program. They allocate the general watershed permits for point-sourced dischargers of nutrients. The system is similar to Maryland's existing program. Facilities are responsible for meeting their individual waste load allocations. For point source dischargers, there is no baseline requirement, a departure from Maryland's program. Point source to point source trading is allowed but administered and monitored by the Virginia DEQ. Facilities can either create or buy credits to meet their point load allocations. Credits can be bought if a wastewater plant exceeds its allocation or would like to exceed its allocation for the year. Individual allocations are determined by a variety of factors. Overall results of the program are mixed. The VA legislature has allocated \$387.6M between 1997 and 2007; difficulties remain in the program. As of yet, the trading exchange, just like PA's, has yet to be fully formalized.

Alternative Four: Bonding Bank for Solid Waste Facilities

Under this option, the EIERA would develop a Bonding Bank or issue bonds for Solid Waste Facilities. The goal of this initiative is to integrate the Market Development Program while creating regional solutions for solid waste by both diverting waste and establishing facilities that meet regional waste needs. The projects may include CNG trash hauling trucks, wet transfer stations, natural gas recovery systems and regional facilities that can accept hazardous waste. This alternative focuses on developing a fund for companies who site, build and operate solid waste facilities.

Significant Findings – Bonding Bank for Solid Waste Facilities

- The staff ranked bonding bank as the fifth highest option of the 20 presented
- A bonding bank would complement and build on the already successful Missouri Market Development Program
- Opportunities exist to potentially expand in-state facilities (some recycling is trucked out of state)
- There is strong statutory authority in support of recycling efforts
- Potential financing opportunities exist in the following areas: Conversion of existing waste hauling trucks to CNG, building methane recovery systems including those which can support the development of land fill gas (LFG), and in building additional sorting functionality into current recycling operations

Bonding Bank Market

The Missouri Market Development Program promotes the development of markets for recovered materials and recycled content products throughout Missouri by providing financial incentives, technical assistance and information services to businesses, governments and other organizations. The Missouri Market Development Program's financial assistance is targeted towards developing and expanding manufacturing capacity in Missouri, by assisting businesses with the purchase of equipment needed to enable manufacturing facilities to use or process recovered materials. The

current risk to this program is the potential legislative changes reallocating the funding. Solid waste districts are common to many states. They typically have the authority to fix fees and charges, as well as issue bonds. In Missouri, solid waste management districts are considered “subordinate” agencies and not considered separate, free-standing governments by the Census of Governments.

There are 20 solid waste districts in the state of Missouri. Districts are made up of contiguous counties. These districts were created “to foster regional cooperation among cities and counties in addressing solid waste management issues. The main function of a district is to develop a solid waste management plan with an emphasis on *diverting waste from landfills* and to assist with implementation of the solid waste management plan.”¹⁰

The Solid Waste Districts are essentially “mandated” to recycle. They actively recycle numerous kinds of materials. All of the districts are regularly audited, and the original receipts for the amount of materials recycled are included in those audits (which are available online). State statutes also set targets for recycling. Some of the recycled goods are trucked out of state, for instance, to Iowa creating an opportunity to promote recycling by developing (financing) the construction of in-state recycling facilities.

State statute governs the actions of the Solid Waste Districts. For example, Missouri code of state regulations 10 CSR 80-9.050(3)(B)1 states, “The district shall submit to the department (DNR), at the end of each state fiscal year quarter, a report which contains the following for each (landfill diversion) project in progress: A. The details of progress, including the volume or weight in tons of waste diverted for each type of recovered material utilized in the project, if appropriate.” The Missouri Department of Natural Resources oversees the implementation of these statutes and others by the districts.

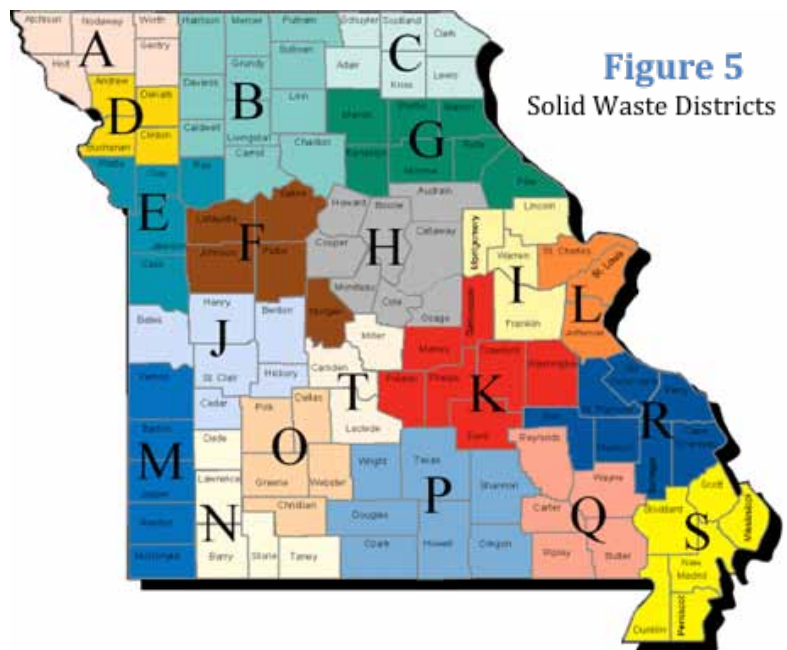


Figure 5
Solid Waste Districts

Current and past programs supporting recycling include: ¹¹

Solid Waste Management District Grants

Money comes from fees collected when waste is disposed of in Missouri’s landfills, or when it is sent through a transfer station for disposal in another state. The Solid Waste Management District Grants return a portion of the fees collected to fund things like recycling, waste reduction, composting and education. Local district planners coordinate within district grants.

Missouri Market Development Fund

The Missouri Market Development Fund is used to develop markets for recovered materials. The Solid Waste Management Program (SWMP), the Environmental Improvement and Energy Resources Authority (EIERA) and the Department of Economic

Waste Reduction and Recycling Targeted Projects

Group Opinions on Bonding Bank for Solid Waste Facilities

"I think that solid waste is the number one issue facing the state of Missouri . . . we're the fourth largest export of waste amongst all states in the United States and the cost is significantly rising."

Focus group participants offered several reasons for why this business line deserves consideration. First, participants generally believe that the state does not have enough landfills, and it is overly difficult to get one sited. Second, much electrical generation produces a lot of fly ash, which creates the need to dispose of this toxic waste. Third, there is an impression that landfilling versus recycling is a significant economic issue; participants believe that jobs are being exported. Fourth, the Authority already runs a program, the Missouri Market Development Program (MMDP), which receives a portion of landfill tippage fees to help develop private sector recycling initiatives.

Converting Trucks to CNG

Figure 6 Image source: http://www.wm.com/about/press-room/2012/20120801_CNG.jsp

[illegible]

Natural gas is abundant in North America thanks to advances in drilling technologies in new shale gas basins. Where are these growing reserves? Right where they are needed most. Significant shale gas supplies are located along major goods movement corridors.

diesel engines. Compressed natural gas (CNG) is one of the cleanest fuels currently available for use in heavy-duty trucks. Replacing a typical diesel engine with a natural gas engine reduces:

- Up to 86 % of air particulates
- 80 % in carbon monoxide
- Up to 50 % in nitrogen oxides
- 25 % in carbon dioxide

Waste Management has also undertaken the installation of natural gas fueling stations in 13 metro locations across the U.S.¹³ Missouri is not one of them, which could represent another market opportunity for the Authority. As the graphic on the right indicates, Missouri features two critical elements necessary to support a robust market in CNG conversions: heavy road usage by trucks, and a nearby developable supply of natural gas resources.

A survey of two other haulers in Missouri, American Eagle Waste Industries and Meridian Waste Services appears to indicate that these haulers have not converted their trucks to CNG. However, as the price of diesel fuel rises and natural gas prices fall, there will be market pressure on haulers to convert to CNG as a cost saving measure. Operational efficiencies also exist as vehicles that run on CNG usually have a longer per tank range than diesel powered vehicles.

Landfill Gas Energy Potential Based on 2004-2008 Average Gas Flows



Figure 7 Image source: MDNR

Methane Recovery Systems and Land Fill Gas (LFG)

In 2004, MDNR estimated that 22 landfills in the state produced enough methane that the installation of methane recovery systems for the production of landfill gas (LFG) was potentially warranted. The following image shows those sites. As of 2004, three landfills had methane recovery systems and were providing landfill gas to the market. These plants include Fred Weber, Oak Ridge and Rumble Sanitary Landfills.¹⁴

Since the release of the cited report, discussions of methane recovery for the production of LFG seem to have gone dark. In June 2012, MDNR released the "Solid Waste Management Program Methane Gas Policy" but the document does not discuss using methane as a source of LFG. It does however discuss various engineered solutions for controlling methane migration.¹⁵ This is an issue at eleven different landfills across the state, most of them in the urban areas.¹⁶ Financing the development of LFG at the sites where it is appropriate, and financing the installation of methane recovery systems represent two potential areas of growth for the Authority.

Building Additional Recycling Capacity

According to the MDNR, the state has permitted three infectious waste processing facilities, five material recovery facilities, a composting facility, and a lone recycling waste processing facility, which is located in St. Louis County. As of July 8, 2008, MDNR records indicate there are 20 proposed facilities of varying types, mostly landfill expansions. There do not appear to be any additional recycling facilities listed under proposed new facilities.¹⁷ This could present an

opportunity to finance the building of additional facilities, particularly in regions where Missouri is trucking materials out of state. A list of existing material recovery facilities are listed.

Recommendations

1. The Authority should start discussions with DNR on how to create a coalition of agencies to explore how to develop a plan for developing CNG resources and placement of CNG facilities.

The development of a GNG refueling network across the State of Missouri will require a statewide initiative. The number of stakeholders includes the solid waste districts, waste haulers, landowners, natural gas industry, fueling stations, as well as a variety of state and federal agencies. The prize is that the I70 corridor would benefit in addition to the waste haulers.

2. The Authority should initiate discussions with USDA, DOE, and Homeland Security about the coalition developing in Missouri.

All three agencies have an interest in developing a CNG distribution system. There is also a possibility of investigating the opportunities with EPA and DOT. Multi-agency projects fit into the national dialog, however, they are very difficult to implement.

3. The Authority should start discussions with the Solid Waste Districts, (SWD) to facilitate the construction and operation of transfer stations and promotion of recycling businesses.

The Authority already has the experience with incentivizing market development for recycled products. Finding ways of leveraging the MMDP program to assist the SWDs' mission would be the goal of these discussions.

Revenue Potential

The revenue potential of this bonding bank is challenging. The dramatic increase in natural gas supply is creating a market incentive to convert waste hauling trucks to CNG. The role of an agency like the Authority would be to accelerate the truck conversion from diesel to CNG. This also makes development of methane capture at solid waste facilities more challenging. Estimating the time horizon for this activity to gain traction is very difficult to estimate. Developing a statewide initiative is often a 10-year process. Because of the dramatic increase in natural gas supplies in the U.S., there is a lot of interest in converting this commodity into products. If the initiative catches enough community leaders' attention, it could move substantially faster than 10 years. More probable than not, the revenue source for the Authority will be federal grants to work on developing a statewide plan.

The revenue potential of working with the SWDs in the near term is building support for the MMDP program. Longer term, developing this relationship has the potential of leading to leveraging the bonding ability of the Authority in partnership with SWDs to construct recycling and transfer facilities that capture the added value from waste products.

It may be that much of the market potential of this business line will be served by the private sector. The one area where the private market will have trouble realizing is the development of a CNG network of pumps along the interstate corridor. The market will not take hold until there are sufficient pumping stations nationwide for long haul truckers who are willing to purchase CNG

tractor-trailers. This is a proper role for government to provide the bridge funding to develop the system. However, without a national program, it is very speculative to estimate revenue potential for this business line.

Conclusion

A bonding bank would complement and build on the already successful Missouri Market Development Program and help leverage SWDs loan programs. Additionally, there is strong statutory authority in support of recycling efforts. This would suggest that there is a market potential for the Authority. However, there are significant threats to the success of this business line. There are powerful private companies that want the tippage fees reduced or diverted to their companies. The SWDs are well established and may not be interested in working with the Authority.

With the low cost of natural gas, there is a strong market incentive to develop a distribution pumping system for CNG. This is a double-edged sword. It reduces the financial incentive for SWDs to build methane recovery systems and increases the probability that the waste haulers will convert their trucks quickly.

Finally, the development of a CNG distribution system is an interesting option. It will be dependent upon federal underwriting and it is unclear at this time whether the support will be coming from Washington.

Existing Solid Waste Facilities

Southside Recycling

Permit Number: 0618903

Date Issued:

County: St. Louis

Solid Waste Management District: L

DNR Regional Office: St. Louis Regional Office

Contact: SOEMM, Inc.

P.O. Box 25447

St. Louis, MO 63125

Phone: 314-631-3400

Owner: Tim Jansen

SOEMM, Inc.

P.O. Box 25447

St. Louis, MO 63125

Phone: 314-631-3400

St. Peters Central Material Processing Facility

Permit Number: 0618301

Date Issued:

County: St. Charles

Solid Waste Management District: L

DNR Regional Office: St. Louis Regional Office

Contact:

Thomas W. Brown

City of St. Peters

P.O. Box 9

St. Peters, MO 63376

Phone: 636-447-4440

Owner:

Thomas W. Brown

City of St. Peters

P.O. Box 9

St. Peters, MO 63376

Phone: 636-447-4440

Manchester Transfer**Permit Number:** 609504**Date Issued:** May 20, 2005**County:** Jackson**Solid Waste Management District:** E**DNR Regional Office:** Kansas City Regional Office**Contact:**

Manchester Transfer

7801 E. Truman Rd.

Kansas City, MO 64126

Phone: 816-920-6697**Owner:**

Denny Pederson, Managing Partner

Manchester Transfer LLC

1 56th St.

Des Moines, IA 50312

Phone: 515-277-1707**Meramec Valley Waste****Processing Facility****Permit Number:** 618906**County:** St. Louis**Solid Waste Management District:** L**DNR Regional Office:** St. Louis Regional Office**Contact:**

Peerless Resource Recovery Inc.

75 Shady Lane, P.O. Box 400

Peerless Park, MO 63088

Phone: 636-225-7000**Owner:**

Peerless Environmental Recovery Inc.

75 Shady Lane

Peerless Park, MO 63088

Phone: 636-225-7000**Material Recovery and Transfer LLC****Permit Number:** 609503**Date Issued:** Dec. 13, 2004**County:** Jackson**Solid Waste Management District:** E**DNR Regional Office:** Kansas City Regional Office**Operator:**

Jack H. Willey

1201 E. 215th St.

Cleveland, MO 64734

Phone: 816-921-8286**Owner:**

Jack H. Willey

Material Recovery and Transfer LLC

4020 Winchester Avenue

Kansas City, MO 64129

Phone: 816-921-8286**Alternative Five: Statewide Financing for Rural Areas and Small Towns**

This business line revealed a significant market need for new technologies in rural areas. There are also significant barriers that may diminish the market potential for the Authority

Significant Findings – Rural Areas and Small Communities

- The 86 public utilities that serve less than 10K customers may be natural clients for distributive power projects.

Outage coordination is the most significant short-term challenge for utilities. It is estimated that 10 GW of new resources will be required by 2016 to maintain an appropriate planning reserve margin creating demand for new distributed generation.

- There are 900 municipal governments that serve populations of less than 10K and 816 municipalities that serve populations of less than 5K. Many of these communities may find distributive power or cogeneration facilities as part of their economic development program.
 - New technologies, such as combined heat and power facilities at wastewater facilities, create an opportunity for smaller communities to develop an energy source when they upgrade their sanitary sewer plants.
 - USDA has made it a priority to promote distributive power as an economic development strategy for rural communities.
 - Cogeneration plants as well as solar and wind generator leases on agricultural land create a new revenue source for farms, generating secondary jobs for rural communities.
 - National Renewable Energy Laboratory (NREL) estimates that Missouri has enough wind to capture up to 275,000 megawatts of power – enough to double the state’s total annual demand for electricity. Many of these windy plots are relatively close to St. Louis or Kansas City, lowering the cost of transmitting wind energy to urban areas. The average 269-acre Missouri farm could host three to four wind turbines generating \$18,000 to \$24,000 annually in land lease payments.
 - The wind generation industry continues to grow exponentially. In 2009 Missouri was ranked as the fastest growing state with a 90 % increase in wind generation. This impressive number is a result of its very small base. The 150 MW increase occurred in the NW part of the state where wind speeds rival that of the plains.
 - Missouri has few bio-digesters in operation today, but is one of the top five hog-producing states in the country. The EPA’s AgSTAR program reports that 154 Missouri hog farms are potentially profitable sites for bio-digesters that could be capable of producing 3.5B cubic feet of methane and generating 301 Gigawatt-hours of electricity each year from these hog farms. It is estimated that there is about \$22M in forgone economic revenue to farms and local communities.
 - U.S. Senator Charles Schumer is pushing for energy funding to make bio-digester facilities affordable for dairy farmers. Mr. Schumer is seeking to reinstate an expired energy grant program that provides grants to farmers for up to 30 % of bio-digester facilities costs. According to 2000 data, Missouri ranked 17th in the nation and has 50 dairies that would benefit from this program.
- MDPUA has partnered with the University of Missouri and a number of ethanol producers to purchase power from CHP technology.

The Market - Financing for Rural Areas and Small Towns

Rural communities and small towns have a significant need for reinvestment in their communities. The Missouri Department of Economic Development (MDED) is one of the lead agencies on creating economic sustainable rural communities, and is an important partner under this business line. Additionally, Missouri Department of Natural Resources is concerned that the recent economic downturn will adversely impact the ability of these communities to provide the necessary infrastructure to provide drinking water and maintain clean surface water. These two partners are critical to the Authority’s success in this business line.

There are a variety of economic and demographic trends adversely impacting the financial sustainability of small and rural communities. The traditional economic engines have structurally changed over the last 40 years. Food processing plants, slaughterhouses, and retail farm equipment distribution centers are now regionally located. The result has been an economic starvation of rural communities while the health of agriculture continues to be robust. The

Authority can be an important player in helping rural regions reverse this trend. The nexus is that the agriculture industry continues to need electric power and meet environmental regulations and the Authority is positioned to provide financing for this new infrastructure. Additionally, working with the agricultural industry and rural communities creates the opportunity to promote a nutrient trading program providing yet another revenue source for rural communities.

Additionally, there are some longer-term trends that may increase the demand for distributive power. This includes the aging infrastructure of the interstate transmission lines and better balancing of generation plants across the state. Many interstate transmission systems are already at or near capacity at the intertie points creating the potential for brownouts during peak periods. Serving this capacity need with distributive power also provides added value to consumers through participation in the green revolution.

The distributive power generation market was strengthened with the 1992 Energy Supply Act that allows independent power producers to construct power plants and sell on the open market. Deregulation continues with new initiatives like the Community Choice Aggregation (CCA) legislation, allowing communities to transport distributive power generation across regulated utilities distribution and transmission lines. Today, there are five states that have passed CCA: CA, IL, OH, NJ, and RI. Three more states are considering legislation. Another initiative is using resident financing for solar power where residents purchase one solar panel that is operated within an array controlled by the local utility, which then pays interest to the homeowner through their bill. There are 87 public electric utilities in Missouri that could be interested in a similar program.

Today, the supply market is rapidly developing with new technologies that are economic competitors to fossil fuel plants. This evolution is largely a consequence of aging fossil fuel plants, increasing fuel costs, and the falling costs of new technologies. The changing energy production market provides opportunities to help communities increase their distributive energy generation and economic sustainability.

Missouri may have a structural barrier to exploit a number of these market opportunities because the state of the rural electric cooperative grid serves areas with single phase lines. Three-phase is required to allow larger cogeneration facilities to push power onto the grid. This opens an intermediate opportunity of upgrading the rural distribution system. This may not be appropriate for the Authority; however, it is a clear opportunity for partnering with other agencies.

Focus Group Opinion

"I think they should have a specific program addressed to those communities . . . looking for a few million bucks to upgrade their horrible wastewater plant or change out water meters so they get more revenue..."

"A lot of our rural communities are losing population and they're dying. And we (DNR) see this on the wastewater and drinking water infrastructure side. They can't afford the infrastructure because they don't have enough population base ... they're losing population because there's not opportunity in these small towns and ... we're in the process of creating a plan where we can provide more holistic community assistance and I (see) this as fitting in very well with one of the initiatives that we're looking at as a department."

The focus groups recognized that the economic sustainability of many rural communities is in question. A number of the participants liked the idea of the Authority offering their financial expertise to the smaller communities statewide. These participants also recognized one of the significant issues confronting the Authority to successfully implementing rural community assistance is that many of the loans will be small. The challenge for the Authority will be outreach and bundling of small loans.

Market Potential

EIERA's relationships with smaller communities through the SRF and Brownfield programs makes it a logical partner to offer additional services to communities that want to introduce distributive energy systems, cogeneration systems, and energy efficiency conversions as part of an economic development strategy. Creating a comprehensive plan between MDED and MDNR has the potential of creating new economic activities for rural communities.

The potential for partnering with Federal agencies also exists. For example, USDA awarded \$250m in 2012 for smart grid projects that will allow distributive power to interconnect to the electric grid. In the last three years, USDA RD has provided over \$1.2B in electric loans. And, USDA has funded 26 flex fuel pumps through the Rural Energy for America Program in Missouri. The Authority is working with USDA to create a supply of CNG from farms for the flex fuel pumps and cogeneration of electricity to utilize the smart grid is a natural fit.

The MDED has three agencies: the Missouri Infrastructure Development Opportunities Commission (MIDOC), the Missouri Development Finance Board (MDFB), and the Missouri Technology Corporation (MTC) that offer financial support to rural communities. The MIDOC limits its loans to \$250k at a 3 % interest rate. The MDFB restricts their loans to \$1m or more and does not explicitly include distributive power in their acceptable projects. Finally, MTC provides seed awards not to exceed \$500k. The Authority's experience in working with communities and private activity bonds could help in leveraging the three agencies' programs.

USDA is promoting co-generation for farms, and USEPA is promoting combined Heat and power (CHP) generation systems at wastewater facilities. There is a natural fit for the Authority to leverage these programs to accelerate the implementation of CHP technologies. Looking at the national market, there is 189.8-installed MW capacity from CHP technology.

Missouri has several CHP systems suggesting the market is competitive. This conclusion is further supported by Idaho and Washington installations that have the lowest electric prices in the nation. To gauge the size of this market, it estimated that there are 50 dairies and 150 hog farms that may be appropriate for CHP technology in Missouri. Assuming that the farms have an average of 200 animals, an appropriately sized facility would cost about \$3m. This translates to \$600m in economically feasible plants for Missouri. This estimate may decrease depending upon where the farms are located on the grid.

Distributive power is another very active market. The NRDC estimates that there is about 275 GWs of wind potential in Missouri. The current installed price for commercial grade wind generation is \$120 per KW. The same potential constraints exist on location and available transmission lines.

Both CHP and wind generators do not add significant permanent employment. Instead, its primary economic impact on a rural region is the construction employment, the new revenue

source for farms, and the increase in the local tax base. As both technologies are independent from investor owned utilities, the property value accrues to the county in which they are cited. And the potential revenue stream to farms is significant. Lease rates on three commercial grade turbines can provide before tax income up to \$24k and the cost savings and revenue potential can be as high as up to \$300k annually on the average sized Missouri farm.

There are other ancillary benefits from promoting these technologies. The CHP technology has the potential to balance the local electric grid as well as protecting surface watershed. Additionally, this technology may be integrated into a nutrient trading program.

Recommendations

In order to prove out this business line, there are a number of additional steps that need to be undertaken to determine the extent of the market barriers to entry.

1. The Authority should start discussions with DNR on how to develop a strategic alliance that leverages the SRF program for combined heat and power facilities for wastewater projects.

There are a number of technologies that overlap with DNR's responsibility. The projects that have the potential to generate revenues through loan applications could receive a higher funding priority by using a combination of subsidized loans and market rate bonds leveraging the SRF program.

2. The Authority should start discussions with the Department of Economic Development about developing a cooperative partnership between the two agencies for reinvigorating rural communities.

The DED's three agencies (MIDOC, MDFB, MTC) have different missions that overlap the Authority's mission. It appears that combining MIDOC's relatively low loan limit with the Authority's market bonding authority may open up new opportunities for rural communities. Additionally, the reverse exists for the MDFB, which restricts their loans to greater than \$1m or more to jointly finance private projects to distribute the risk. Finally, working with MTC and coordinating their seed awards for startups, the Authority's bond program may be another way to achieve multiple goals.

3. The Authority should start a discussion with USDA about a strategic partnership to develop a plan for distributive power plants in Missouri to complement USDA's investment in smart grids.

The USDA issued a report in April 2011 that lays the foundation for the awards made in September 2012 where USDA awarded \$500k to Missouri and Iowa for smart grid projects. Financing construction of generation facilities will fully maximize smart grid technology.

4. The Authority should research emerging technologies and develop an outreach program to educate rural communities about their opportunities.

An awareness program will be critical to the success of working with rural communities. Many of the electronic medias for pushing out content often does not work with these communities for a variety of reasons.

5. The Authority should start discussions with the Missouri Public Utility Development Alliance about designing a program for financing distributive generation facilities for their members.

Developing a relationship with public utilities will be important to establishing the credibility of the Authority. MPUA is a natural partner to develop these relationships.

Revenue Potential

The opportunity for the Authority is making loans for infrastructure. This analysis looks at two technologies for the revenue analysis. There are other technologies that can promote rural economic development and improve environmental protection. Table Ten provides a summary of the annual potential revenues to the Authority.

The CHP technology for farms appears to be economic for approximately 200 farms. If the facilities cost \$3M in current dollars, this is a potential borrowing pool of \$600M. Placing one loan would result in \$15K in fees. Because of the compelling payback to the farm, I have assumed that the Authority is able to complete 10 loans per year resulting in an income stream of \$312k for ten years.

Table Ten: Pro Forma Revenue For Rural Assistance Alternative Business Lines			
	12 to 18 Months	18 to 48 Months	Greater than 48 Months
CHP Technology	\$0	\$112,500	\$450,000
Distributive Generation	\$0	\$63,281	\$253,125
ANNUAL TOTAL	\$0	\$175,781	\$703,125

There are also over 225 communities with populations between 1K and 6K that are potential clients for the CHP technology. Assuming completion of ten loans per year would have the same revenue stream as the farm conversion. This suggests that the CHP market is between \$312k to \$624k annually. Table Ten estimates that once the program ramps up, the Authority could generate \$450k in fees placing CHP facilities.

The second major funding opportunity is in the distributive energy market. There are a myriad of technologies in the market. This analysis only looks at the wind generation market. The NDRC estimates that there is 275GWs of untapped wind capacity in Missouri. At the national cost of \$1,200 per KW, this implies that there is the potential for \$33B in wind turbines. While this seems a significant number, other states have seen the generation capacity shift from 2 % wind to 30 % wind within ten years with a supportive environment for county siting and state regulators supporting contract rates. For Missouri, this equates to new investment of \$9.9B in the state. The capital markets are already established for the large commercial facilities. There is a role for the Authority in working with the public utilities who may want to put in wind or solar power. If it is assumed that the Authority can capture one half of one percent of the potential load, this would translate to \$165M in new investment annually. This would provide the Authority \$253K in annual fees. And, at the end of ten years, the Authority would have supported only 5 % of the total wind potential in the state.

There are other ancillary power and pollution technologies that the Authority could finance. However, they would be substantially smaller amounts that may require bundling in order to make the placement competitive. The potential of grant revenue from the USDA or DOE is significant. It is not included in this analysis.

Business Line Alternative Five Conclusion

The rapidly changing technology in distributive energy plants from solar, wind, cogeneration, methane production, and small hydro has lead to a plethora of products and claims that need to be proofed for Missouri's climate and geography. There are funding models from grass roots citizen action to multinational corporations building projects side by side. This "wild west" market would benefit from an expert that Missourians could rely on as well as an agency that has the ability to cobble together the myriad of funding products into a coherent financing option for communities. The value in pursuing this business line is that it leverages a number of the Authority's responsibilities.

There are two structural barriers that could impede the development of this business line. The first is the lack of three-phase distribution lines adjacent to the eligible agricultural activities. This may not be as significant as it first seems because it is the larger farms where the CHP technology is appropriate and their farms may already require three-phase service. A second structural barrier may be long-term purchase power contracts help by public utilities. These will not be an issue if a community's electric load is growing. Additionally, these 30-year contracts may not be as inviolate as they appear on the surface.

There are also a number of threats to this business line. The first threat is the fluid nature of the market leading to lending on the wrong technology that may lead to loan failure. A second threat is the fragmented nature of the market may make it difficult to create sufficient demand for the bond placements. A third threat may come from the investor owned utilities (IOUs) objecting to promoting generation facilities that reduce the demand for their generation plants. A fourth threat may come from other state agencies that simply do not want to work with the Authority.

The Authority has several weaknesses as well. The first is that the Authority does not have the capacity to mount an effective statewide outreach initiative. A second weakness is the lack of knowledge about the products available and which technologies have the best probability of being the successful technology. A third weakness is that the Authority does not have a relationship with the companies that desire to locate significant commercial projects in the state. A fourth weakness is in the Authority's relationships with the agricultural sector. These weaknesses suggest that partnerships with other groups that can fill in these gaps in the short term are critical to a long-term successful strategy.

The Authority also has several strengths that will increase the probability of success. The first is their relationship and reputation with federal agencies active in this business line. A second strength is a good relationship with sister agencies and local governments as a trusted partner. A third strength is the Authority's ability to redeploy its resources in response to changing market conditions without having to go through an interim budgeting process.

Case Study

In Pennsylvania, a dairy owner outfitted his 300 head dairy farm with a CHP bio-digester. He discovered that the value of his waste heat translated to about \$300k in cost savings and new revenues. He uses the waste heat for heating water, heating the shop with radiant-floor technology, and heating his special needs parlor. There is also enough heat to power the grain dryer and pasteurize the hospital milk for baby calves. Additionally, he sells surplus power back onto the grid. He took technology for a dairy with more than 1,000 head and modified it for his more modest dairy of 200-300 head. The long and short of it is that the project cost him \$2.7M and he expects to recover his total investment in less than 10 years.

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Executive Summary Focus Groups

The focus groups provide the first external view of the Authority in this process, and the comments on what needs the focus groups see as service gaps in Missouri that the Authority should fill. The conclusions that are drawn from the five focus groups is that the Authority is not well understood. The groups often confused the role of the Authority with the role of the Department of Natural Resources, (DNR). Few participants were aware of five areas that the Authority currently is engaged in. Overwhelmingly, the participants have a favorable view of the Authority. The most common critique of the Authority is that they would like more information about what the Authority does and receive a personal contact about how the Authority could help them with their financing issues.

When the participants were asked about future business lines, overwhelmingly the participants claimed they wanted more information, who is currently doing work in the area, and whether it is something that the Authority should be involved. However, there was support for all the business lines, if one takes into consideration of time lines and the politics necessary to enter these business lines. All the focus groups saw the need for each of the business lines.

FOCUS GROUPS

The Focus Group Profile

Missouri is a diverse state geographically and economically. The focus groups were designed to take advantage of the geographic industry characteristics. Four locations were selected to canvas the east, central, southwest and western parts of the states. The locations were St Louis, Jefferson City, Springfield, and Kansas City. Representatives from the water infrastructure, energy, solid waste, brownfield, private sector, public sector, university, and private business associations were identified and willingly participated in the process. Two sessions were held in Springfield to insure that all representatives of state agencies that interact with EIERA had an opportunity to present their views.

At the March 26th meeting the Authority staff and board brainstormed a list of the Authority's stakeholders and potential partners. The board and staff compiled the list and the Authority provided the phone numbers and emails to the consultant for developing the focus groups. In discussion with Authority the consultants determined that the first week of June would be appropriate, in part because this date was after the legislative adjournment. The consultants decided on five focus groups which would test three areas of information.

The "snowball" technique generated 44 names to populate the five focus groups. The consultants set a goal of having between five and seven participants for each session. Participants represented a range of fields - associations, energy, solid waste, water, waste water, financial, economic development, and agriculture. There were individuals representing the rural electric coop, environmental associations, cities, small communities, private industry, and state government agencies. The consultants did not attempt to have a representative from each industry at each session.

The 30 participants covered a wide variety of stakeholders.

- Financial sector included representatives from investment and commercial banks
- Solid Waste sector included private waste haulers, solid waste district, and City Public works
- State Agencies covered the Department of Economic Development (DED), Missouri Office

of Administration, Department of Natural Resources (DNR) and Division of Energy (DOE) Missouri Loan and Finance Board (MLFB) and the Missouri Agriculture and Small Business Development Authority (MASBDA)

- Other public sector representatives were from University of Missouri Business Development And Engineering and the Public Service Commission (MPSC)
- Four cities were represented that included public works, treasurer, solid waste, water services, brownfields coordinator, Sustainability Officer, and Community Development
- Private companies included manufacturing, engineering/consultant, and solid waste hauling
- Non-profits represented included a local watershed group, two national environmental groups and a 501(c)3 that promotes energy efficiency and education
- Associations represented included the Association of Missouri Electric Cooperatives, two Chamber of Commerce(s), and the Missouri Association of Council of Government, (MACOG)

Table Eleven: Focus Group Locations and Dates	
•	Focus Group 1 -- June 6 th AM St. Louis,
•	Focus Group 2 – June 7 th AM Jefferson City
•	Focus Group 2 – June 7 th PM Jefferson City
•	Focus Group 4 – June 8 th AM Kansas City Jefferson City
•	Focus Group 5 – June 18 th PM Springfield (Phone conference call)

The distribution of names, in part dictated where the focus groups would be held. The first focus group occurred the morning of June 6 in St. Louis, the second and third in Jefferson City on June 7, and the fourth in Kansas City on the 8th. The focus group for Springfield occurred on June 18 and was conducted by phone.

Thirty participants - approximately a sixty eight percent participation rate - attended a focus group. A combination of email and phone contacts generated the high response rate.

Purpose of Focus Groups

The focus groups provided a high level reaction to the Authority's strategic planning process. The groups were used to gather information about how the stakeholders perceived the draft mission and vision statements. Additionally, it was important to gauge the level of understanding the stakeholders have about the Authority's current business lines. Third, this was the first opportunity for external feedback on the proposed new business lines.

The measurement instrument was developed using purposive interviewing techniques. The consultants provided participants with a background paper with the mission, vision, description of current operations, and a description of the five proposed business lines with the second email contact and then again with the confirmation email. This allowed participants to become familiar with the material, reduce interviewer bias, and stimulate a more meaningful discussion among the participants.

At the start of each focus group, consultants provided participants with four documents. The first was the mission and vision statement on a single page, and modified descriptions of the current and new business lines. The second document was a rating scale of the Authority's current businesses lines that had the participants rank the current business lines on a scale of 1 to 3. Additionally, the matrix had a yes or no question whether the participant had any knowledge of

Table Twelve: In Person Focus Group Attendees				
St Louis Group				
1	Zitnick	Charlie	DA Davidson	
2	Hickey	John	MO Sierra Club	Chapter Director
3	Skouby	Curtis	City of St. Louis	Dir. Of Public Utilities
4	Schneider	Eric	St. Louis Regional Commerce And Growth Association	Sr. Dir. of Energy And Environment
5	Cross	Dan	Remains, Inc.	
6	Berger	David	Solid Waste District	Planner
7	Mahfood	Steve	Mahfood Associates	President
Jefferson City Morning Group				
1	Pauley	Mark	DED	Incentive Specialist
2	Didrikson	Rob	State Of Missouri	State Recycling Coordinator
3	Gunn	Kevin	PSC	Chairman
4	Steinwachs	Marie	University Of MO Extension	Environmental Asst. Ctr. Director
5	Downing	Mike	DED	Deputy Director
Jefferson City Afternoon Group				
1	Stewart	Brent	Assoc. of MO Electric Coops	Legislative & Regulatory Counsel
2	Wilbers	Brenda	DNR-Division Of Energy	Program Director
3	Stafford	Tony	MO Ag. & Sm. Bus. Develop. Authority	Director
4	Miserez	Bob	MO Develop. Finance Board	Director
5	Campbell	Josh	Missouri Energy Initiative	Exec Director
6	Standley	Derrick	Waste Corp. Of Missouri, Inc.	
Kansas City Group				
1	Tippett-Mosby	Leanne	DNR	Deputy Director
2	Queen	Tammy	Kansas City MO	City Treasurer
3	Shaw	Michael	Kansas City	Public Works
4	Modlish	Greg	Siemens	Account Exec, LEED
5	Richardson	Larry	Wells Fargo	Managing Director
6	Hennessy	Sean	Kansas City	Water Service
7	Leakey	Christina	City Of Independence	Community Program
Springfield Group				
1	Casaletto	David	Ozarks Water Watch	President
2	Lucks	Barbara	City of Springfield	Dept. of Environmental Services
3	Hough	Olivia	City of Springfield	Planner
4	Dixon	Rob	Springfield Chamber of Commerce	Executive Director
5	Hermes	Doug	Missouri Association of COGS	Statewide Planning Coordinator

the particular current business line, as well as a comment box. The third document was a ranking sheet, one page for each proposed draft business line asking a number questions on a scale of 1 to 3 of agree, no opinion, disagree. Again, there was comment space provided for each business line. The final document was developed after the St. Louis focus group. This rating sheet asked the participant to rank the five proposed business lines from 5 most preferred to 1 least preferred. This data was collected from the St. Louis group by having them pace the ranking on each rating sheet. The Springfield group did not use the third document as it was deemed to be overly cumbersome for a phone conference. However, Springfield did use the fourth document and provided an overall ranking.

After the focus group circled the words on the mission and vision statements or rated the current and proposed business lines a directed discussion ensued to gather context around how the participants determined their answers. The conversations were recorded and the comments were

transcribed.

Since the data is largely descriptive, the analysis is limited. Essentially, the data is summed then the comments are sorted into buckets to determine themes, commonalities, and outlier data. Appendix XX provides the documents that were provided to the participants.

The analysis is broken down to participants' opinions concerning the mission and vision statement, the participants' opinions concerning the Authority's current business lines, and the participants' opinions concerning the Authority's proposed business lines.

Participants Opinions Questionnaire Responses - Mission and Vision Statements

At the March 26, 2012 board retreat, participants granted preliminary approval of the draft mission and vision statements. These statements were presented to the focus group to gauge the group's reactions to the statements. The participants were asked to circle the words that either excited or concerned them. The facilitator then asked participants to discuss why they circled their words. The papers were collected at the end of each session and the circled words were tabulated.

Table Fourteen provides a count of words that more than five participants circled. The words identified by multiple participants had a wide spectrum of value responses. The written comments of the two words that received the most attention, *preeminent* and *wise use*, illustrate this diversity of opinion. Several participants felt that preeminent meant 'exclusive' and 'divisive' while

Table Thirteen: Preliminary Coding Participants by Industry		
COUNT	CODE	LABEL
3	1	Finance
8	2	Environmental
4	3	Utility
4	4	Business Development
2	5	Industry
4	6	Solid Waste
3	7	Economic Development
2	8	Energy
0	9	Legislative
30 Total Participants		

Table Fourteen			
Saint Louis, Jefferson City, Kansas City, and Springfield			
Written Comments on Mission and Vision Word Count with Comments			
Mission – words that had more than 4 participants remark on them			
24%	17	preeminent	Means only game in town; Need to know how you will collaborate; divisive, too strong? , Why preeminent?; Many agencies involved in this realm; I had to look up the definition just to verify I understood. (may just be me & that word)
13%	9	wise use	Training, advocacy what is it? Protection? Opposed to language - has been coopted, combative, =stewardship
14%	10	provide solutions	collaborative; good; provide = providing
7%	5	Missouri's economy	add for the improvement of Missouri's economy
9%	6	finance	Finance - Should this be "Financing" or Financing Incentives"? Finance Research and Technical Assistance - who receives these? Who are these geared towards? > more that just Missouri/en?
	70	Total circled words on Mission Statement	
Vision– words that had more than 4 participants remark on them			
15%	7	security of knowing	remove it; cut; like it
10%	5	food	yes; ?; ?
8%	4	without compromising	great statement; implies local decision making processes- holistic
8%	4	sustainable	
8%	4	clean	yes; clean and affordable
	48	Total Circled words on Vision Statement	

others took it to mean that “if you do something do it well.” Wise use, the second most circled word, ranged from participants remembering the 1980s wise use movement that advocated for the exploitation of natural resources in the nation’s national parks, to meaning stewardship of Missouri’s resources so that future generations can also experience the natural assets of Missouri.

Participant Discussion on Mission and Vision

Each group quickly established a group norm. One group understood critiquing language to mean what was wrong with the mission statement. Another group established a norm where positive comments were the norm. All the groups were engaged in discussing the words that they liked, did not like, or did not understand.

A number of themes emerged across groups. The first was lack of understanding or awareness of what the Authority is charged to do by statute. Some participants felt the Authority overuses acronyms. Also, several words featured significant value labeling. However, the values attached to these words ran from offensive to desirable. Also, there were a number of words that participants were not able to link to the Authority’s mission. These words were discussed at all four groups and responses were similar across the five groups but not universal.

- Wise use¹ by general agreement was the most value-laden word in the mission statement. However, not all understood the word to be a political statement but instead it was an intergenerational statement where through wise use there will be resources for future generations.
- ‘Preeminent,’ was generally disliked because it appeared divisive rather than inclusive. There were participants who suggested that the words creating partnerships linked with preeminent would properly identify the role. Others felt it was about time that there was a preeminent agency that would become a one stop shop for all the programs. This was in response to the fragmented energy efficiency and conservation programs across the state. This theme reoccurred under marketing questions.
- ‘Security of knowing’: A number of participants were unclear what security meant and why should EIERA be responsible for citizens knowing.
- ‘Urban’ and ‘rural’ generated considerable discussion. The urban/rural phrase was perceived as one vs. the other.
- ‘Food’: Participants generally did not make the link between environment and safe food.
- A number of participants wanted to add or replace words such as adding ‘efficient’ to ‘Clean and affordable energy.’
- Several participants wanted “economic development” have a higher profile in the statement while others wanted economic development cut. The emphasis of economic development generated considerable conversation.
- The legislative focus groups had a perspective distinct from the other groups. They were interested in how EIERA handles accountability, profitability and whether this should be included in the mission statement. They generally wanted to add profitability and accountability to the mission statement.
- There were a number of words that resonated with participants - words like thrive, finance, research and technical assistance, “when I think of The Authority that’s what I think they do”

¹President George H. W. Bush's attack on environmentalism failed to save his 1992 candidacy, but it was a high water mark for the political influence of the "Wise Use" movement, a network of loosely allied right-wing, grassroots, and corporate interest groups dedicated to attacking the environmental movement and promoting unfettered resource exploitation. At present, the best way to recognize Wise Use groups is by the policies they support, e.g., removing present environmental protections and preventing future environmental reforms in order to benefit the economic interests of the organization's members or funders. Timber, mining, and chemical companies often fund Wise Use groups. <http://www.publiceye.org/magazine/v07n2/wiseuse.html>

There were a significant number of comments throughout the sessions concerning the performance, perceptions and experience with EIERA. The comments and recommendations are almost universally positive. There was one participant who did not have a positive perception of the Authority.

In general the groups actively engaged in processing the words. It is recognized that words carry values, and the groups did identify these words. A number of phrases have been aggregated from the five focus groups. These phrases provide the context and insight found in Table One.

On 'Unclear'

"I got a lot of words that are kind of cloudy to me and doesn't really grab my attention of what it really does."

"And I think it doesn't, you've got acronyms, EIERA, you don't use the words authority, energy, improvement, environmental improvement or energy at all, barely (is) it in the mission, use it a little bit but definitely no linkage in the mission to what you're actually named is."

"I have no idea what lifestyle meant so I, that whole sentence there, I focused on the lifestyle"

On 'Preeminent'

"I'm wondering if somebody (at) USDA was sitting at the table with a challenge EIERA statement that EIERA is pre-eminent and that that's, pre-eminent, I think by definition, is exclusionary,"

"And maybe a mention of creating partnerships because that's how I view the staff at EIERA."

"I just felt it was too strong"

"a little bit hoity toity"

"not sure why they're pre-eminent, Maybe primary is a better word"

"I've actually been advocating for a while that you need someone to help coordinate all"

"the energy and environmental functions of the state"

"Pre-eminent, I like that."

"just having the word "Authority" in your title means, it's more, if you're going to be "The Authority" then you need to be the one"

On Wise Use

"Is a buzz-word for the whole right-wing corporate funded effort to dismantle environmental regulations so it's like, would seem like dog-whistle politics to some, and I don't think it's meant that way but it's a very laden term"

"Mostly because there's a sort of a quasi organization called 'Wise Use' that's funded by large mining and petroleum and natural gas extraction interest"

"wise use to a lot of people means scorched earth policy"

"it's not always guaranteed that you will get wise decisions."

"I just like its inclusion here because I think "wise use of resources" is in general just a big part of what The Authority does."

On 'Urban/Rural'

"For a state that's so divisive, to have "urban and/or rural lifestyles," splitting urban from rural I think is not a good idea."

"I don't know why those are exclusive"

"It feels unfinished"

"I saw the word "food", being the rural side and I've read the other material about the rural I just assumed it was agriculture and that's, so that didn't bother me, at least that was my assumption."

On 'Sustainable'

"Sustainable, in some quarters, has quite a (negative connotation)"

"sustainable" because to us that's probably fringe, agriculture,"

"we talk about a lot in rural settings, certainly co-ops we talk about quality of life so I might just throw that out as possible(substitute for sustainable)."

"It's not a bad word, it was just a connotation ... organic, low-inputs, those type of things that maybe a little turn off to some folks."

"clean energy, that too, just like sustainable energy, has a certain connotation

"sustainable, when I thought of it, it wasn't the fringe part, it was the encroachment of losing farm land"

Other Words or Phrasing Concerned

"As far as loaded words, the ones that caught my eye specifically, a bank(?) word, "solutions, security, clean and lifestyle"

"The Authority would necessarily be concerned with and words that stuck out were "food, lifestyle, recreation".

"I also circled the word "foster" because I believe foster is negative. It's a negative because preserve is one thing but to foster it that means you're compromising and then later on you're saying "without compromising" ... And that is the fundamental flaw in government, in my opinion."

"I underlined "security" and kind of goes with "wise decisions without compromising (inaudible)" so they're making a connection to me, if they're making good decisions without compromising current or future generations."

"question mark about "food" because I'm just curious as to how they're connected to food."

"It's either preserving, we're not using or we're using wisely in a sustainable fashion..."

"security in the vision statement, I don't know, that just jumped out at me,"

Other Words or Phrasing Liked

"the 'well being of our citizens,' it just felt comforting"

"provide solutions". a big part of what The Authority (does)"

"I circled "finance" but, I know, as a finance geek that's my, I love it."

"I like it in general; I think the sound of it is good. It made me sort of feel positive about what they were doing. I circled the word "security" giving citizens and visitors security that they have access to all of these things and I also underlined the "without compromising the needs of future generations" ... it's an important part of the vision of, or should be the important part of the vision of this group."

On Adding Words/Phrases

"you have economic opportunities in the vision but I do think somehow you're kind of missing an opportunity to kind of use your mission and your vision to improve the economy,"

"The order has some bearing on this, yes, but the whole kind of "security of knowing" kind of derails it for me. There's no reason why it shouldn't be committed to a state where citizens and visitors have access to, not knowing that they have access to, just have it."

"I would add one word to the line "clean and affordable energy", which is adding the word efficient."

"It says we're committed to Missouri where citizens and visitors and I would add and businesses."

"I prefer the word "stewardship"

"I think one of the benefits of The Authority is their flexibility and their nimbleness and to be able to somehow to craft, or capture that in here might be helpful."

On EIERA

"Think collaboration is kind of the key, collaboration amongst other state agencies, collaboration amongst business groups, that kind of how I, that one and then, "technical assistance" is a buzz-word."

"finance, research and technical assistance when I think of The Authority that's what I think they do"

"it seems to me that what The Authority's been doing is helping to finance say air pollution controls on coal plants or something like that so it's working toward clean energy"

"is it perceived that EIERA is going to develop a state energy policy looking at future development because that's a significant issue and I don't know if that's the responsibility of EIERA, the Public Service Commission, DNR, or somebody else"

Table Fifteen

Participants Knowledge of Current Business Lines and Opinion of Effectiveness

Sum of Five Focus Groups Responses

A. Low Interest Loans for Clean Water and Drinking Water Infrastructure	Yes	No	No Opinion
I have knowledge about this business line.	82%	15%	0%
I have knowledge Adjusted by Written Comments	56%		
The low interest loan program has been effective.	59%	2%	28%
B. The Market Development Program			
I have knowledge about this business line.	79%	17%	0%
I have knowledge Adjusted by written Comments	77%		
The program has been effective.	58%	6%	25%
C. The Brownfield Revolving Loan Program			
I have knowledge about this business line.	79%	18%	0%
I have knowledge Adjusted by Written Comments	72%		
The Brownfield program has been effective.	67%	0%	25%
D. The Low Income Weatherization Activities			
I have knowledge about this business line.	73%	21%	0%
I have knowledge Adjusted by Written Comments	67%		
The low-income weatherization program has been effective.	48%	4%	31%
E. The Private Activity Bond Program			
I have knowledge about this business line.	67%	23%	2%
I have knowledge Adjusted by Written Comments	58%		
The issuance of private activity bonds has been effective.	39%	3%	36%

Participants Questionnaire Opinions of EIERA's Current Business Lines

The participants were selected because they were involved in markets that the Authority assists in financing. At least half of the participants were aware of each of the five current business lines. The number of participants that said they had knowledge was adjusted by clarifying written comments. A number of participants marked they had knowledge of the business line then clarified that it was at best cursory. This provides a moderate level of validity in the opinions they provided on the effectiveness of the current programs.

The Authority has a public relations penetration rate of about 60 percent. This indicates that an outreach strategy would be a productive activity for increasing business line activity. The effectiveness rating was above 55 percent for the first three business lines and below 50 percent for low-income weatherization activities and Private Activity bonds. This is an interesting rating as when the participants rated new business lines it was this business line that received the highest ranking for the activity that the Authority should pursue. There are a number of different explanations for these results. However, one must be careful in reading too much into this data.

The written comments add some context to the written comments. The comments were organized into four groups, descriptive, supportive, critique, unfamiliar. A number of the comments were simply descriptive of what they understood about the program or some observation about the market in general. A number of participants that were familiar with the Authority made supportive remarks about the Authority. The critique category included comments for how the Authority could improve their performance or increase their market presence. Almost all of the critiques were how to improve. The final category, "unfamiliar," was used to adjust the "I have knowledge" count for those that marked yes. In summary, the participants generally would like more information about the Authority's activities and believe that coordination and partnerships would enhance the Authority's presence in these business lines. Additionally, focus group participants generally did not understand the relationship between DNR and the Authority.

Comments about Low Interest Loans for Clean Water and Drinking Water Infrastructure

82 percent responded that they had knowledge about the program. When one pairs the written comments to the respondent's answer, this percentage falls to 56 percent. There were 14 comments that were categorized as either confused or unfamiliar. If one further analyses the comments it becomes clear that the many of the participants were confused, 9 comments were on the SRF responsibilities or simply did not know the charge of the EIERA. *"Just not familiar with success of the program" and "may be an overlap with DNR water quality diversion DED CDBG can also assist with drinking water"*

There were four supportive comments focusing on EIERA being a leader, helpful, and efficient. *"This program has been helpful, especially with some of the smaller water systems"*

24 of the 30 respondents made comments on the SRF low interest loan program. This was the most comments made on the current business lines.

Comments about Market Development Program

79 percent responded that they had knowledge of the program. When one pairs the written comments to the respondents answer, this percentage falls to 72 percent. If one further analyses the comments, many of the participants had a grasp of how this program works. This was revealed in the seven positive critiques. *"the work of the MMDP is not well known. MMDP's work would benefit from marketing assistance", "It could be improved through partnerships and better state goals"*

There were 3 supportive comments mentioning the Authority's helpfulness and value of the program. *"Very helpful in that new markets can be time sensitive-EIERA is very aware of the need to move quickly."*

There was one participant who believed that the Authority should not be in this business line. They offered no constructive criticism, just simply stated that the program “*was poorly managed*” and that EIERA “*has begun to have a negative effect*”. The 58 percent of the participants rated this program as efficient. This is within one percent of the rating given the SRF program.

Comments about Brownfield Revolving Loan Program

79 percent responded that they had knowledge of the program. When one pairs the written comments to the respondent’s answer, this percentage falls to 76 percent. This program had the highest percent of respondents who believed the program was efficient, 67 percent. This may be related to the fact that there are respondents from three cities that have an active brownfield program.

There were 6 descriptive comments and five unfamiliar comments. There were 3 supportive and 3 critique comments. Comments include, “*Staff are very helpful in walking us through the many steps*” and “*While the various available brownfield programs have been successful, a greater degree of coordination, planning and program integration can measurably increase overall effectiveness and impact.*”

Comments about the Low Income Weatherization Program

73 percent responded that they had knowledge of the program. When one pairs the written comments to the respondent’s answer, this percentage falls to 58 percent. There were 2 supportive comments from participants with direct experience with the program. “*I work closely with EIERA in this area; they are helpful to DNR/DE by providing a secure fund for utilities weatherization funds administered by DNR/DE*”

There were 7 critiques that largely focused on marketing or growing the program. “*This program activity accompanied with administration coordination could be valuable in proper/effective implementation of local PACE programs and other Mo DNR administered energy efficiency programs*”

Comments about the Private Activity Bond Program

67 percent responded that they had knowledge about the program. When one pairs the written comments to the respondent’s answer, this percentage falls to 39 percent. Participants had the least familiarity with this program. 11 of the 17 total comments were unfamiliar. “*Not familiar with this although I was aware of it*”

There were 2 comments that addressed the multiple bonding authorities at the state. “*Program has been effective in the past but now thought most went thru MDFB*”. And, one comment wondered if there should be consolidation of state agencies.

Participant Discussion of Current Business Lines

All five focus groups were asked to comment on the Authority’s current business lines. The diversity of participants’ experience resulted in a number of comments about their lack of familiarity with what the Authority currently does. The participants were almost universal in their personal experience in dealing with the Authority. Additionally, the focus groups were engaged in offering ideas on how the Authority could increase their exposure, and increase outreach for

their current business lines. There were several comments about participants not knowing the difference between EIERA and DNR. One participant was unfamiliar with the State Revolving Loan program for water. Most participant's knowledge of the Authority came through their direct experience of working with it.

One of the more interesting themes that emerged was the understanding that to be successful that, as a state, we have to look at solutions from a regional perspective. This includes watersheds and economies'. The import for the Authority is no one identified a any agency or group that is working on how to get all the different programs working in the same direction.

The focus groups also identified perceived gaps and business line overlaps. These comments often revealed either lack of knowledge or misperception. For example, small communities felt the DWSRF program favored large cities and large cities felt the reverse. The focus groups did identify several service gaps that could provide business opportunities for the Authority. Gaps identified existed in three areas: larger cities need help in 1) affordable financing; 2) rural septic systems is in failure; and, 3) creating a more uniform system of implementing weatherization programs. Leadership resonated with the group and they generally felt that EIERA may be able to fill this role, by the virtue of their relative independence from the regulatory arm of government.

Most of the comments ended up focusing on how to increase the coordination and exposure of the EIERA. The participant felt that the programs are all well run, particularly the MDP. There were very productive comments about how to better coordinate and conduct outreach. Several participants identified the need for a preeminent agency to become the portal to all the services offered by the state.

Summary

People who have had direct experience working with EIERA have found EIERA professional, efficient, and believed the agency filled a critical need without which certain projects would not have been possible. The concerned comments came from people who have not had direct experience accessing EIERA's programs, and with the exception of one out of 30, all said they did not have enough knowledge about EIERA and would like to know more. In essence, the concerns they raised can be interpreted as concerns they have about their own organizations. A good example was one group predominately made up of government administrators, who were concerned about taking risk and getting out ahead of legislators. They stressed the need for transparency and accountability.

On Lack of Understanding

"Technically, it would be almost all of them. (no knowledge)

"Well, I think the kind of knowledge, I knew they did something in that area but I'm not familiar with it.

"Brown fields and private activity bonds but I knew that they did that but I couldn't tell you anything about the details,"

"I just can't, I'm unaware of the results of any of the programs"

"I didn't know they had a brown field loan or the weatherization."

"I'm familiar with the programs, I don't know specific results"

"I just don't know the details on them, if you're asking effectiveness, I just don't have that knowledge"

"What line is drawn between the activities of DNR versus EIERA, is there a clear line or is there a fuzzy line?"

"I guess I have a question, just coming from DNR, I know the division manager but I don't know everything else that DEQ does, details, I don't know if our DEQ, like our air program, could market to the folks, the utilities that come in for air permits and say "Hey, by the way, if you need money, here's EIERA. I just don't know how that would work."

On DNR SRF Program

"Need to start to look at protection in a more comprehensive way, watershed scale, there is tremendous value in having a leader"

"opportunity in the septic system replacement"

"because of that I've heard it's actually more beneficial to Metropolitan Sewer District and St. Louis and some of the really larger borrowers than it is to the small rural areas."

"And oftentimes, in those very small rural communities, the inherent obstacles, sophistication and just somebody that can deal with it from the municipal side of it, they just don't have the resources to even proceed, I've seen that."

"The scoring would show certain projects would score very high, yet other projects were funded, which would cause us, we did put in a whole bunch of projects and then they would, ...select projects that were very, very low priority for us so it would cause us to say OK, do we want to participate for low-interest loans to do this project that has a very low, sort of, impact on us"

Praise for EIERA

"there is DNR, which is a regulatory and enforcement group and there's EIERA, which is good government and I think just by virtue of even having this meeting, is reflective of EIERA's desire to improve rather than punish."

"Specifically, start to finish and ongoing" and by ongoing I mean the term of a given loan that EIERA makes, they're very efficient in their process leading up to it, they're very helpful with a given community or district, both on, or all three on, the technical and managerial and financial side and then they provide ongoing assistance during the term of that financing because it is in their interest to make sure that community or that district stays sustainable."

"Our experience, and I'm thinking more the market development, our experience with probably three or four granting agents have been with the district and EIERA, they're very comfortable ...with throwing ideas out and kind of helping us hone kind of a hare-brained idea and taking it to this could be a successful project, long term project that we can partner with"

"they're timely too. When you're thinking about new markets you kind of have to jump on those pretty quick and you can't say "We're going to submit this grant a year down the road, we'll look at it for six months""

On SRF Program

"We have to start thinking about it from a watershed or a landscape level look at the problems. It's not just an individual sewage system, it's not just an individual community, its watersheds and the larger picture and how you tailor these programs to those larger situations"

"In the other activities, all of them are important but I think this view of watershed scale and large scale has to be the driving force behind a lot of the key programs and when you get into market development, ... the world has changed drastically since some of these first laws were written."

"one of the things that we had been looking at and were trying to identify sources in Kansas City, this sort of goes to the first issue I brought up, we have 6,000 septic systems still in the city. Unfortunately, a lot of these people are lower income, they're sort of in areas that we've put sewers in but now they have to figure out a way to make a connection and they have to pay for that, we can't make that connection for them" so we're looking for ways of helping them to identify it and we were told in that instance they (DNR) weren't going to provide any assistance there, that specifically was where they said "No, these are going to be for rural septic systems, not specifically for Kansas City and so you don't, we're not going to assist you in any way".

"I've got a spin on that, not exactly what you're talking about but the first one, low-interest loans for clean water and drinking water, I think there's some misinformation or at least a misperception out there that it's only for these huge sewer projects or overhaul a huge waste water plant or something like that and I think we've come to learn, subsequently, that that's really not the case. I've had state staff tell me that "Well, yeah, no, we don't want to do water meters,"

"And guess I had the exact opposite experience in dealing with the SRF program and going through that process. When we went to, in some of our attempts we were told that "You guys have participated enough, these really are for smaller communities and not for large cities"

"I've heard a lot of communities extol the program (SRF) and how great it is but there's also a lot of communities, especially the smaller communities, that talk about how difficult it is, how burdensome it is to access it, I understand it takes a general obligation bond, voter passed, to get into the program and it seems like there's a pretty high hurdle to get into it"

"I have a question. Is it, what is SRF?"

On Market Development Program

"I think one thing also, on the positive side, when the state target grants, the DNR target grants in the solid waste program went away the EIERA grants even became more important from the market development and the recycling standpoint. The target grants had been primarily used for equipment and start-ups and pretty much the same profile as the EIERA market development programs so I'm, we were very pleased to have that as still another tool."

"I don't really want EIERA funding my competitors.... I have a lot of direct experience with their market development program: It's not positive."

"I have short experience with it and to me, it was, the benefit of the program was the work that it was able to do in the rural communities."

"It's badly needed there but it's also in rural areas, especially"

"Well, the market development program, it seems like there has been that tool for us to help businesses get equipment to process materials, it's one of the few things that we have in the state that's helped to launch some recovered materials industry and in that respect that seems to be a good program."

"In fact they partner with DED on several projects where the applicant didn't have the financing in place or they were short of funds then the EIERA filled that gap"

"Where Missouri needs to go is to take that next step into economic development and develop packages to bring remanufacturing industries on a large scale into Missouri. EIERA is not going to achieve that with 50 and 70 thousand dollar grants"

On Energy Efficiency and Weatherization Program

"You've been very great to work with."

"Division of Energy is who works closely with the EIERA to house the funding that (inaudible) case is to get the funding commitments so utilities were more comfortable with the funds being deposited in the EIERA,"

"It's a very effective program, you can get a lot of energy savings out of weatherization."

"What EIERA does is very appropriate, they administer the funds ...I think it's a very well-run program. It's not getting to where it's used as widely as it should be"

On Brownfields Loan Program

"I've worked with both (inaudible) on steering committees on the marketing development program and the brown field RLF and they're both very effective programs"

"Brownfield I marked yes, it has been effective, it is something that, without this incentive to actually clean up the land the city would not have been able to purchase the property at that time. And thank you (EIERA) for all of your help with that, I mean, that was definitely the key piece."

"Particularly with the brown field revolving loan program, that would be a valuable resource to communities like ours where we have a fairly undeveloped program in brown fields, we have fairly unsophisticated developers involved with these projects and being able to tap into that funding at the EPA level is a lot more challenging to us. Having The Authority provide that program and that assistance to work through that process and access that funding is huge for us."

"we have an EPA funded brown field program and we've applied for EPA grants ... that we administer and we've completed other clean ups through EPA grants but this particular clean up was an EIERA grantbut this has been very smooth and actually much less administration on our end, working with EIERA rather than an EPA grant."

On Private Activity Bonds

"I know this has been around forever and there are, I think a few states, that have only one entity in the state that issues bonds, it's for all purposes because bond issuance is the only restricted in

Missouri for certain purposes by statute and one could question whether or not it's, that's less efficient to have several different agencies to issue bonds so it's not a big deal but you have to wonder whether that's really necessary."

"I think there is area for growth is that, in terms of private activity, with the IBB(?), the Private Activity Bonds, the outreach is not there or the understanding of the program or the process is not there to encourage them to currently use The Authority because there's a wonderful benefit there but people are afraid of it or don't fully understand the process just like "You're going to save us 2 – 5 basis points, I mean, 2 – 5% on your interest costs, why aren't you using this program?"

On Outreach and Marketing

"There's a lot of interesting innovating things going on within Missouri in government in particular yet we're not very good at tooting our own horn about it for whatever reason it seems"

"here's my beef with all-state agencies... we tend to list all of our programs separately on our websites without looking at what the customer's needs are so if you go on our website you'll see a list of all the DED programs and that's really kind of stupid because if you're really trying to get the customer focused on a solution then you would have our brown field program, EIERA's brown field program, the federal resources for brown fields, you'd have everything for brown fields that are related dedicated to the customer rather than only listing your agencies' resources"

"DNR goes to everybody and it's nice to have an article once in a while but really understanding what kind of financing is available, how much, how easy or difficult it is to get for EIERA and economic development maybe through the various conferences and associations that work off the ground with the target communities or clients, that there could be some sort of program that transports around that's a panel discussion"

"I think this is a state government issue, it's not just a EIERA issue, but because we have multiple bonding authorities and all of them have an economic development component to them"

"We've run across exactly what you're saying in so many places in the state where we're used to working with the local economic developer. EIERA comes in they don't, they're not accountable to economical development, they don't coordinate with the local economical development, they don't coordinate with us, they give somebody money and bam, and then they're gone."

"the Economic Development Corporation of Kansas City and its counterpart in St. Louis and other cities as well, making sure that they're aware that, "Oh, we can't help you through this program", which is their normal sort of path that they take a company down, "but The Authority has this program and you should really look into it or we can get you hooked up with it" or whatever, so that, I think, would be helpful."

"I would encourage them to become more involved in groups like the Government Finance Officer's Association, the MWEA(?), the AWWA, be at those shows, just last weekend in St. Louis and first part of the week there was a national WEF Collections Systems conference but it really kind of became 50% Missouri and 50% the rest of the country because it was in St. Louis. They're just good opportunities to network",

"I think the biggest thing is to continue outreach"

On EIERA Competitive Advantage

"Need someone to coordinate the 17 or so agencies who do weatherization"

"We've really got to change the perspective in Missouri to more of a regional focus, watersheds, waste sheds and so on, there's a lot of divide and conquer politics in Missouri. Unless we can start to see a little bit of a bigger picture here I think we're going to continue to struggle with making the appropriate investments to achieve the things that are kind of set forth in the mission statement... getting everyone on the same page is a really big, hard, important job that no one's really doing and we need a lot more help doing that and someone to try to get those oars pulling in the same direction and I think that's really, really a challenge."

"Figure out is there a way to finance, to create a financing system so these 17 or however many agencies that actually implemented the weatherization funding can continue to do that work in the absence of the stimulus money"

<p>Table Sixteen: Each Question Was Ranked On A Scale Of 1 to 3 where 1 = disagree, 2 = neutral and 3 agree</p>
A. This business line will serve a need in the state.
B. This business line is not currently being done by the private sector.
C. EIERA should be engaged in this business line.
D. This business is being done by another state agency.
E. If this business line is being done by other agencies, please list them.
F. There is value partnering with other agencies.
G. There is an immediate need for this business line.
H. This business line can be implemented.

"We've looked to EIERA even stronger when some of the other funding sources were taken away and I think you have to always be aware of areas that would need assistance and for whatever reason there is nowhere else to go and I'm not speaking of anything specifically right now."

"I think that's a role that the EIERA can really step into based on their statutory structure and their board composition, where they have representation from a variety of different state agency interests and private interests."

"I think there's tremendous opportunity for The Authority to be the nexus for a lot of different policy initiatives and priorities from the state. Right now, I think solid waste and brown fields, two programs that are environmentally focused but have a tremendous economic development aspect to them,"

"I think that we need to start doing that and we need to start looking more at innovation and that may be a place where EIERA might be able to play more of a role because of that flexibility that they have for funding innovation."

Participant Questionnaire on Possible New Business Lines

The focus groups were asked to rank the five proposed business lines in two ways. The first way was through a series of seven questions about each proposed business line.

When the points were summed the groups were fairly consistent. Table Seventeen shows business line Alternative One was ranked first four times and second once. Alternative Two had four first or second rankings with only Kansas City ranking it last. The participants were from the region

of the City in which the focus groups were located. Table Nineteen provides a validity check on the ranking. The question was asked whether they had knowledge about the proposed business line. Alternative One, Energy Efficiency received the most have knowledge with only 49 percent. This may also account for why this proposed business line ranked the highest. Less than 30 percent of the participants had any knowledge about the other four business lines. The business line that people were least familiar with was nutrient trading and not surprisingly this received the lowest ranking.

Table Seventeen Focus Group Ranking by Two Methods Overall Points Allocated as Compared to Criteria Ranked					
	St Louis				
	Energy Efficiency	Storm Water	Nutrient Trading	Bonding Bank	Rural Assistance
Overall Rank	1	2	3	3	3
Criteria Rank	2	1	5	4	3
	Jefferson City Morning Session				
Overall Rank	1	3	4	2	3
Criteria Rank	1	2	4	3	2
	Jefferson City Afternoon Group				
Overall Rank	3	2	5	4	1
Criteria Rank	1	2	5	4	3
	Kansas City				
Overall Rank	1	2	5	4	3
Criteria Rank	1	5	4	2	3
	Springfield				
Overall Rank	1	2	2	4	3
Criteria Rank					
	Sum of Five Focus Groups				
Overall Rank	1	2	5	4	3
Criteria Rank	1	2	5	4	3
	DNR Staff				
Overall Rank	3	2	5	4	1

As a reliability check, consultants provided a separate ranking sheet that asked the respondents to rank each business line overall. Table four provides a comparison of the two ranking methods. When asked whether overall to rank the five alternatives a different ranking emerged. This strongly indicates that the participants were making up their opinions based on how the question was asked. This is consistent with the low knowledge base about the five proposed business lines.

The Authority also five DNR staff members rank its proposed new business lines. This group should be more informed than the focus groups. Their ranking was consistent when ranking of the aggregated focus groups when the ranking of the business line 1 ranking is switched with business line 5.

Table Eighteen Criteria Ranking Questions B through F
B. This business line is not currently being done by the private sector.
C. EIERA should be engaged in this business line.
D. This business is being done by another state agency.
F. There is value partnering with other agencies.

Participant Discussion on Possible New Business Lines

"... I think they're all very exciting to have ... hold some great possibilities"

The most common theme of this section of the focus group discussion was simply lack of understanding about the new business lines. The participants were generally not focused on

emerging trends and markets. One participant summed it well by saying that it was difficult to identify barriers based on the description. What this answer illustrates is that they were building their answers not on their own experience but what they read. Generally the participant's worst ranking was a result that they knew nothing about the business line, not because it was a bad idea.

Table Nineteen		
Responses to Questions D Through F		
Alternative One: Statewide Financier for Energy Efficiency		
D. This business is being done by another state agency.	7% to 11%	
E. If this business line is being done by other agencies, please list them.	(3) DNR, PACE, DNR-DOE, MDA, PACE, DED	
F. There is value partnering with other agencies.	11% to 13%	
Alternative Two: Financing Best Management Practices for Urban Storm Runoff		
D. This business is being done by another state agency.	6% to 8%	
E. If this business line is being done by other agencies, please list them.	(2) DNR, MSD, STL, KC, (3) Local Govt. EPA, MDNR, USACE	
F. There is value partnering with other agencies.	8% to 13%	
Alternative Three: Developing a Nutrient Trading Market for Phosphate, Nitrogen and Sediments		
D. This business is being done by another state agency.	3% to 8%	
E. If this business line is being done by other agencies, please list them.		
F. There is value partnering with other agencies.	9% to 12%	
E. If this business line is being done by other agencies, please list them.	Local Waste Water Districts	
Alternative Four: Bonding Bank for Solid Waste Facilities		
D. This business is being done by another state agency.	6% to 8%	
F. There is value partnering with other agencies.	6% to 13%	
D. This business is being done by another state agency.	8%	
E. If this business line is being done by other agencies, please list them.	(2) DNR, PSC, USDA, Ec Dev, DED	
Alternative Five: Environmental Financing for Rural Areas and Small Towns		
D. This business is being done by another state agency.	5% to 8%	
E. If this business line is being done by other agencies, please list them.	Ag Econ Dev., (2) DNR-DOE, Solid Waste Districts	
F. There is value partnering with other agencies.	7% to 13%	
Springfield Group not asked		

The nutrient trading program generated a lot of conversation. Participants exhibited little understanding of how these markets work, reducing the value of the comments. The participants are all experts in their own fields and correctly pointed out this is a complex issue fraught with risk. Some comments from the discussion appear below.

On Understanding EIERA

"... I think there could be a lot of opportunities for some integration of what EIERA can provide to the Department, especially in that realm"

"Currently we're revising chapter 260 of the code that really affects EIERA and so we're working with a lot of private sector folk and talking about how the solid waste management program, (and) EIERA kind of work together so it's really good to be here to really work with that and understand more about it."

Table Twenty Summary of Written Ratings on Seven Criteria for Proposed Business Lines				
	St. Louis	Jefferson City	Jefferson City	Kansas City
Alternative One: Statewide Financier for Energy Efficiency	2	1	1	1
Alternative Two: Financing Best Management Practices for Urban Storm Runoff	1	2	2	5
Alternative Three: Developing a Nutrient Trading Market for Phosphate, Nitrogen and Sediments	5	4	5	4
Alternative Four: Bonding Bank for Solid Waste Facilities	4	3	4	2
Alternative Five: Environmental Financing for Rural Areas and Small Towns	3	2	3	3

"Billions of dollars of development going on it's exciting ... people are really digging in and looking for economically viable ways to develop their infrastructure, to address the crumbling water systems and so forth and that's good for our business but it's a challenge. It's exciting but it's a big challenge so any help we can get financially from groups like the EIERA is fantastic."

On the Energy Efficiency Program

"It has a huge positive environmental impact just because we're a whole state so energy reductions immediately begin to translate into improved quality, improved environment and all the other repercussions from that."

"If you look at Illinois and their energy efficiency program and they have some quasi-state agency running it and they've had some particular success in the smaller towns and how they structurized (sic) it,... it was pretty exciting."

"We've worked with EIERA as a senior manager, one of the senior managers on their SRF program so we're actively involved with that and we're actively involved with SRF programs across the country so this is a great opportunity for us to expand the scope of the services offered by The Authority and the mission and they're kind of bringing everything up to date."

"I think the biggest bang for the buck is found in that area ... the rural communities, the energy efficiency"

"There's so many programs and stuff out there already, we've got one, Energize Missouri, the co-ops have got different funding, AMERON(?)'s got different programs, DOB(?), DOD(?) for some, in some cases, I'm not sure that we need someone else,"

"Really because it's just kind of a hot issue right now. It's the thing that our city council continues to push us towards, green solutions, energy efficiency, promoting that within the community. We received a 20 million dollar grant from the federal government to do, to start an energy efficiency loan program and various things that we have done but then there's always a need to do, it seems like everybody wants to do more ..., from my perspective, would

be tremendously helpful.”

“I think it presents one of the best opportunities for creative financing for projects and for long-term economic sustainability of a project or a group that taps into this resource. It’s an opportunity that actually will bring money back to the local economy because, through the efficiency savings.”

“I think it’s projects that are really designed to pay for themselves and if you can lower the cost of borrowing for those kind of projects you increase the success of that... I would suspect there’s going to be some real opportunities as we start to look at alternative energies down the road, whether it be solar or wind or whatever, and I would, again, I would expect that EI ERA would be something that would be very interested in”

“I did rank as number one, the top item, to become the state-wide financier for energy efficiency ... the EI ERA is postured so uniquely to be able to leverage those types of programs “

On Storm Water Program

“Well, (My knowledge) you could fill a thimble, I know we need it.

“Well, right now, that’s where the rubber is meeting the road. So many, so many of our environmental issues are now boiling down to non-point source, which is you and me, and that requires a huge umbrella, or a giant shotgun, whichever comes first, but it certainly changes the scope of how we reach the people who have to make those decisions to change their practices when you start working on the non-point sources it’s a whole different ball game.”

“Right, for several reasons, I think even though MS4 program has been around since late 1990’s I think, we’re really just getting into it and I think communities are just now starting to realize, ... their water and wastewater and storm water issues, and I think it’s an area that is going to be a very difficult challenge for us... to address it and we’re just starting now to implement some of our TMDL’s that are to address urban storm water run-off and it’s a very tough nut to crack and I think because this would be an area that’s very similar to some of the activities that EI ERA already does... That it’s a natural fit and so that’s another reason that I put it as high priority.”

“There are several things in here about the storm water and the other things, and I didn’t see an example and maybe that’s all it is but combining energy efficiency and the infrastructure issue for the storm water, helping municipalities with financing energy efficiency upgrades to their waste water systems, which are usually the highest energy users”

“And I actually have a question on the storm water. To put any more money into developing storm water plants in Missouri doesn’t seem logical to me until we would actually go through, as a state, and work with the the US Army Corps of Engineers and update all of our flood maps because we are so out of date, most of our storm plants, frankly, if they’re anywhere near a flood plain, do not make sense so why is it we spend any more money in that path until we’ve updated significantly with the USACE.”

“Has been really important in Springfield lately would be financing the best management

practices for urban storm run-off.” We’re continuing to run up against issues in this regard with the development process and really finding ways to help work with the private sector and finance some of these upgrades”

“Number one is the urban storm water run-off, it just seems not just for me and water quality but this is an issue that municipalities are in the midst of having to deal with and the huge financial burden it’s going to place upon them so I really think that transcends probably across all lines is that storm water.”

On Nutrient Trading

“Almost universal (group feeling), I ranked nutrient trading last, that said, I think if there, if there is a role for the state in nutrient trading EIERA is the natural vehicle for that because their expertise on the finance side, I, and just trying to think through, ... I can’t, I can’t conceive of another department or agency in the state that would be a more likely candidate for it.”

“I actually put the phosphate market as number two because what I was looking at is which of these things have the biggest negative impact on the environment?”

“I don’t know squat about nutrient trading markets or anything like that but it occurs to me that, and the political challenge.”

“I got to believe that you would have to do this on a multi-state level on a Missouri/Mississippi river shed with multiple states bordering those for it to work.” I thought it was actually a pretty good but I ranked (it last), I don’t think it’s feasible”

“Timeline involved, that it would be a really, it says that in the recap that it would take years and years and years and I just think there’s a lot of potential to end up without any measurable results at the end of the day”

“The issue being nutrients among other things but also, this is, the ag sector obviously plays a big part in this and trying to address the agriculture sector through regulatory means will not work for many reasons, politically and economically for them because typically they’re working at the margins, they don’t have as much opportunity to pass on costs to their customer. So to me, and I come from an air pollution background where we had the acid rain program, which was a resounding success, I see trading as an area that is very exciting and I think that it has real opportunities to find cost-effective solutions (inaudible).”

“Go upstream and I think maybe the real problem is over-regulation.”

“I guess I do see you have a point on that, but the EPA is going to be issuing, I guess, rules on nutrient removal in the next 5 years or something so, unfortunately, the state, we are going to have to address that so I think creative ways of looking at addressing it, regardless of how we feel about overall regulation and stuff, all of it,... we’re doing disinfection, we have disinfection in our treatment plants which are going to improve the, reduce the bacteria in the Missouri River by less than 3% but we still have to do it but the actual impact is pretty miniscule so opportunities that people take a creative way of looking at meeting,”

"We've been doing some pollution work in the region with farms and a lot of the nutrient loading to the system is connected with inefficient use of water and farms are, silos, have been dis-incentivized, or whatever to waste a lot in the past and so if you are just addressing nutrients it's more like addressing the end problem rather than the source of the problem and if there would be, to me it needs to be a more comprehensive package that looks at, I mean one program found millions of gallons of savings on one farm from just tweaking those overhead sprayer systems, they were out of caliber."

On Solid Waste Bonding Bank

"We don't need bonding for solid waste facilities, I mean, we need to look at the recycling facilities and the market development aspects of recovering material and not the transfer stations and the trash trucks and the disposal sites, that's gone regional like we need to do with watersheds and it's handled by fewer and fewer larger companies and so forth so there's not the need for that on solid waste on disposal facility but there is need on the recycling facility side and the economic opportunities associated with that but that's not what that presented."

"I think that solid waste is the number one issue facing the state of Missouri. It pollutes everything, landfills create significant amount of greenhouse gas emission, ... we're the fourth largest export of waste amongst all states in the United States and the cost is significantly rising. It impacts every industry that's across there but it is a huge resource that's being treated as a waste and so oftentimes when it comes to managing solid waste, ... At the end of the day good planets are hard to find ..., it goes back to the mission statement of, is it good for the next generation? Everything is driven by economics and not environment because you can't pollute water and say you have safe drinking water, period. ..., I've got my horse because that's, it's a big irritating thing for me to hear about the economic issues but we're not dealing with the environmental issues because without this environment there is no economy."

"Yeah, setting up solid waste facilities, everyone talks about the return on value in terms of the economic cost but it's hard to measure the economic cost ... treat them more as a resource first, resource management is what we like to say, to do more resource management can create more recycling opportunities, it can create more jobs, it'll reduce the amount of exportation of resources to other states and kind of hopefully do some more full circle type stuff. ... I think the EIERA just providing money and backing to these types of facilities would be great because everyone needs them"

"well I'd say two-thirds of the solid waste management districts in the state of Missouri are administered by the regional planning commission, Those solid waste management districts and the staffs, organizations that administer those district programs are very familiar with the Missouri market development program so there's a good alignment there and I think you see, perhaps some of the other programs that The Authority supports and offers, the awareness of it is, can be focused on particular agencies, organizations or programs that actually more readily accesses those types of services."

"we look at the waste district grants, the local money that comes back through the program, EIERA, we look at all of these as just, as a tool, so we have several tools in our toolbox when we're trying to help a start-up company or help a company that's doing well expand, that sort of thing."

On Rural Community Assistance

"... the primary focus ought to be state-wide and not rural."

"I think they should have a specific program addressed to those communities and these communities aren't looking for 50 million dollars, they're looking for a few million bucks to upgrade their horrible wastewater plant or change out water meters so they get more revenue or just address their infrastructure."

"A lot of our rural communities are losing population and they're dying. And we (DNR) see this on the wastewater and drinking water infrastructure side. They can't afford the infrastructure because they don't have enough population base ... they're losing population because there's not opportunity in these small towns and ... we're in the process of creating a plan where we can provide more holistic community assistance and I (see) this as fitting in very well with one of the initiatives that we're looking at as a department"

"Everything right now difficult in a rural area, in a small town and in particular, any kind of environmental progress for a whole lot of reasons. Money seems to be the excuse sometimes, sometimes it's actually the fact but we have to focus on some of the smaller accounts because so much of what we're trying to protect and preserve lies in those smaller towns and rural areas."

On Starting New Business Lines

"EI ERA needs to maybe re-focus and do a better job and some of the things it's currently tasked to do and not be trying to jump into, in some cases, very controversial things."

"You start venturing out into the minefield and I think it's not a good thing for EI ERA in terms of, it's going to get chaotic."

"On risk generally afraid that a lot of time can be wasted without progress and has the possibility of political fall out."

"What level of liability are they creating and why would they cost Missouri jobs by engaging in this?"

Is There Something Missing

The interviewer ended each session with the question of what did we miss on identifying emerging issues for Missouri.

On Partnership and Marketing

"There's obviously, there's a need in the state of Missouri to grow new businesses in terms of entrepreneurial businesses and one of the things that the Department of Energy has funded regionally and they do, we do, we partner with them in the (inaudible) Center and its clean energy trust competition. That's the DOE funds \$100,000 prize for student-based businesses and energy efficiency smart grid. EI ERA could do something kind of in that regard in terms of, it's kind of like a gimmick, it's like a contest, \$100,000" ... And the second idea is that for EI ERA to be well known I think you need to go directly to the residential, to the actual

customers. You're kind of going through businesses, you're going through municipalities but what if you did a residential energy loan program, state-wide, where people could access it? State-wide instead of going through municipality or going through a county, going directly to EIERA that way the legislature would also know more about you, the residents would know about you, get more public (inaudible)"

On More Research and BMPs

"I think there's a need for someone to be a conduit for research and best practices research and somehow do a collaborative efforts and advocacy and so on that can lead to the development of financing the original EIERA study on resource recovery which kind of led to the legislation creating solid waste districts as well as the financial resources. Part of that but we need to have, I see limited role for technical assistance by EIERA and much bigger need and opportunity on the research sides of things as well as the collaboration and advocacy to help develop the financial resources to implement some of the strategies. Not technical assistance."

On Generating Income

"I think it's necessary that anything the EIERA does is self-sufficient and self-funding and actually generate profit for The Authority. They do not get appropriations to fund their staff from their operations, fund their board expenses, it's all fee generated so no matter what they do, and they can't go out and create a wonderful program and expect that they're going to have millions of dollars to grant money into it and to feed and subsidize it because they don't get that kind of money."

On Urban Rural Partnership

"Household Hazardous Waste group, stuff that wouldn't, can't go to basic landfills, stuff like that and we provide that service, Kansas City does, for all the, in addition to Kansas City, but also all the communities surrounding us and stuff. In partnership with Mark (inaudible) at regional council we do outreach activities in lots of other cities and stuff like. That's, that waste stream seems to be growing, Even, the state of Missouri, we are now providing that waste drop off for the, we are working an agreement to provide waste drop off for the entire state because there aren't any other facilities that do it. So apparently there's a huge gap in servicing needs out there. We're also working on a agreement, this with the expansion of methamphetamine issues and stuff like that, all the chemicals from those things end up there so we're actually now having to provide that service outside of the Kansas City area where we have to send somebody to that site to actually take those chemicals out"

"I understand the needs of small rural communities and stuff, but as far as residents and poverty, things like that, those rates that are passing on to them, they have to pay and a small rural community may have a lot of people that, potentially at that poverty line but I know I have 25,000 residents whose household income is less than \$15,000 and I'm passing on rate increases to meet all these other needs. Those, the taxes, I guess my thing is to insure that it's not just are income redistribution program because there's less tax base over here. People over here have chosen to live over here but they have to incur an awful lot, they have to incur higher crime rates, they have to pay higher taxes, they have to pay higher sales taxes, they have to pay an awful lot and then what we do is we say is "But we want to make sure

we're saving lots of rural communities" and those are important, I'm not trying to suggest, but the fact is that this idea that somehow the, our lower income here because they live and they receive the other benefits of the city, they also receive a lot of additional costs "(multiple participants agreeing)

On Focus

"I would have to say they need to stick to who they are, which is about the environment and the energy and it doesn't always equal economics. DED deals with economics. Stick with environmental being the, your environment, protecting the environment as being your number one thing, even if it costs a little bit more, that's your niche because we understand that. It may not always be financed or some big, major project that economic development can do but that niche of protecting the environment and being about the environment, to me, is your niche. Stay there, try not to do anything greater than that, just stay in that realm"

"don't be trying to become everything to everyone, stick to the things that this Authority is good at and does well and that has the most impact as opposed to "Well, we'd like to have a little piece over here and over here and over here" and at my first reading that's what this sounded like was "Oh wow, this is becoming kind of a behemoth as opposed to a focused group that has a particular vision and mission.""

"I would say that we need to work together to figure out, within these various areas, what is the niche for EIERA and I think it goes back, again to the idea of flexibility, where does the EIERA have some flexibility that maybe we don't have where The Authority can kind of fill that niche for us."

"One of the things that stuck out to me when I first read the materials is that potential of technical assistance, which I really liked, and part of my frustration always is when I know financing opportunities are out there and I can't figure out how to tap into them and there's no one that really either has the time or it's their role to provide that kind of hand-holding through it so I think that technical assistance piece is just as vital as expanding the number of programs... I think that's huge."

On Business line Idea

"(I) suggested strongly that states look into spending SRF, the revolving fund money not only for municipal sewers but also for remediation of septic."

"Something else too that, along the line or partnerships, we have the community partnership with the Ozarks, which administers some of the large HUD grants ... and they have a number of collaboratives (sic) that represent different focus areas in the community including an environmental collaborative and ... with Caring Communities and some of those programs is health and human services ... a very good marriage between health and human services and environmental issues, ... I know about the weatherization program and some of those kind of, you wouldn't necessarily call them traditional bed-fellows but there are some very, I guess you would say unconventional partnership that can be made in that arena as well."

On Midwest Values

"We're known in our area of the state for getting everybody together around the table and addressing a problem and figuring out some way to come to a solution even though we may not agree on something else tomorrow but we agree right now this has to be addressed."

On Reaching Out

*"Get the word out about the programs that are available and be kind of a first source of information And the small business incubators like at Missouri State and some of those too."
"I appreciate, I appreciate EIERA doing this."*

Endnotes

ⁱ Green infrastructure is a general term to describe several technologies that strive to either keep stormwater on site, use ecological processes, or a combination to keep stormwater out of surface water.

ⁱⁱ GAO, 2012, Greater Oversight and Additional Data Needed for Key EPA Water Program, Highlights of GAO 12-335. The 319 EPA grant program administered through DNR is for surface water quality and watershed management projects.

ⁱⁱⁱ Distributive energy is generally defined as small generation facilities often serving two purposes, such as heating and power generation or processing waste into fertilizer and power generation. Distributive power can also mean small generation plants spread across a transmission distribution system that balances the load so as to avoid the cost of increasing the power line capacity.

^{iv} Authority: section 260.035.1(23) RSMo 1986; 10CSR 130-1.020 Application Forms and Fees.

^v Two or more authorities may cooperate in a project.

100.560. 1. Any two or more authorities may join or cooperate with one another in the exercise of any or all of the powers conferred hereby for the purpose of planning, undertaking or financing a project or projects located within the area or areas of operation of any one or more of said authorities. 2. When a project or projects are planned, undertaken or financed on a regional or unified metropolitan basis, the terms "governing body" and "community" as used in this law shall mean the governing bodies of the appropriate communities and the appropriate communities cooperating in the planning, undertaking or financing of such project or projects.

^{vi} The data was collected for 2000 through 2006 and published by the U.S. Census Bureau in 2008.

^{vii} <http://www.bls.gov/news.release/laus.t05.htm>

^{viii} Independence Power and Light Empire District Electric Co., City Utilities of Springfield, <http://www.cityutilities.net/conserves/overview.htm>

Columbia Water and Light, <http://www.gocolumbiamo.com/WaterandLight/Electric/electricsystem.php>

Poplar Bluff Utilities, <http://www.pbutilities.com/>

^{ix} Missouri Housing Stock

<http://www.census.gov/prod/2005pubs/h170-04-59.pdf>

<http://www.census.gov/prod/2005pubs/h170-04-59.pdf>

<http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>

<http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>

<http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>

http://www.nhpci.org/images/NHPC_WHRetrofitReport_201012.pdf

<http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>

^{*} Fuel costs include the cost of extraction, transportation, and environmental regulation

^{xi} Technology costs include, regulatory subsidies, emerging technologies, economies of scale, and access to equity markets.

^{xii} MPSC cases EO-2011-0271 and EO-2012-2042 cases responding to Energy Efficiency Investment Act (MEEIA).

^{xiii} Using Data Base of State Incentives For Renewables and Efficiency (DSIRE) comparison tables: Compare MO, IL, IA, NB, KS, OK, AR, TN, KY, OH, IN

- Missouri ranks 3rd for most financial incentives for renewable energy behind Illinois and Iowa.

- Missouri dramatically underperforms in terms of rebates and loans

The fact that Missouri has more incentives and yet lags in implementation suggests that they're a lack of coherence in the market.

^{xiv} Ameren, EO-2011-0271 filling with Missouri Public Service Commission

^{xv} KEMA, Missouri Statewide DSM Market Potential Study, March 2011, Burlington MA, http://psc.mo.gov/Electric/Missouri_DSM

Endnotes (continued)

Potential Study

- ^{xvi} Missouri's Energy Efficiency potential: Opportunities for Economic Growth and Energy Sustainability, August 2011 Report Number E114 www.aceee.org/sites/default/files/publications/researchreports/e114.pdf
- ^{xvii} In August 2011, as part of the State Clean Energy Resource Project, American Council for Energy Efficient Economy (ACEEE) completed the report *Missouri's Energy Efficiency Potential: Opportunities for Economic Growth and Energy Sustainability*. This document is a good starting point for learning about the energy conservation potential for Missouri.
- ^{xviii} 2010 American Council Energy Efficient Economy: ACEE's State Energy Efficiency Scorecard, www.aceee.org/sites/default/files/publications/researchreports/
- ^{xix} Friedrich, Katherine, Maggie Eldgridge, Dan York, Patti Witte, and Marty Kushler, "Through Utility Sector and Energy Efficiency Programs" September 2009 Report Number U092 American Council for energy Efficient Economy 529 14th Street NW, Suite 600 Washington DE 20045
<http://www.aceee.org/sector/state-policy/missouri>
- Missouri Public Service Commission, <http://psc.mo.gov/CMSInternetData/ConsumerInformation/Ameren%20ER-2012-0166.pdf>
- ^{xx} Missouri Department of Natural Resources, <http://www.dnr.mo.gov/energy/weatherization/wx.htm#wxhowtoapply2>
- ^{xxi} See endnote I for citation
- ^{xxiv} USDA has discussed such a concept as a way to keep rural communities economically viable. Illinois, Indiana, Kentucky, Ohio, Pennsylvania, Virginia, West Virginia, and Tennessee
- ^{xxv} GAO Highlights May 2012, "Nonpoint Source Water Pollution: Greater Oversight and Additional Data Needed for Key EPA Water Program, GAO 12-335.
- ^{xxvi} "The Environmental Trading Network." "The Environmental Trading Network." *Water Quality Trading*. Accessed 7/12/12.
http://www.envtn.org/State_Programs_Rules.html
- ^{xxvii} Wetland trading is common in the west including Boise Idaho and Reno Nevada
- ^{xxviii} The \$5.00 value comes from the personal communication of Illana Ayala that indicated the operating cost for CT point source credit sellers was \$5.40.
- ^{xxix} The \$2.75 value comes from the Pennvest 2010 Annual Report auction price.
- ^{xxx} http://www.jki.bund.de/fileadmin/dam_uploads/_koordinierend/bs_naehrstofftage/baltic21/25_Britton.pdf
- ^{xxxi} <http://www.markit.com/en/>
- ^{xxxi} USEPA, *North Carolina Neuse River Basin: Basin-wide cleanup efforts reduces in stream nitrogen*. Accessed 7/11/12, <https://epa.gov/>
- ^{xxxi} <http://www.dnr.mo.gov/env/swmp/index.html>
- ^{xxxi} <http://www.dnr.mo.gov/env/swmp/financial/Swmpfund.htm>
- ^{xxxi} <http://www.sos.mo.gov/adrules/csr/current/10csr/10csr.asp#10-80>
- ^{xxxi} http://www.wm.com/about/press-room/2012/20120801_CNG.jsp
- ^{xxxi} <http://dnr.mo.gov/energy/docs/landfill-data.pdf>
- ^{xxxi} <http://www.dnr.mo.gov/env/swmp/forum/methanegaspolicy-072012.pdf>
- ^{xxxi} <http://www.dnr.mo.gov/env/swmp/methane.htm>
- ^{xi} <http://www.dnr.mo.gov/env/swmp/docs/dglsproposed07-08.xls>