

**Report to the Joint Minerals, Business, and Economic
Development Interim Committee**

Integrated Solid Waste Management Planning

**Overview of Waste Management Plans Submitted to the
Department of Environmental Quality**

August 21, 2009



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Background

In the 2006 and 2007 legislative sessions, funding was provided for Integrated Solid Waste Management (ISWM) planning in Wyoming. This was done in large part because the cost of solid waste management in Wyoming is increasing and local governments are struggling with higher costs. Rising costs are the direct result of groundwater contamination that is being detected at an increasing number of Wyoming's municipal solid waste (MSW) landfills. A growing body of evidence shows that, contrary to previous assumptions, landfills in Wyoming and other arid states generate sufficient leachate to contaminate groundwater. Local governments are seeking ways to address increasing costs.

The Wyoming Solid Waste and Recycling Association (WSWRA) and the Department of Environmental Quality approached Governor Freudenthal with these problems in late 2003. Governor Freudenthal asked the Department to convene a citizens' group to help identify the key problems with MSW management in Wyoming and to identify solutions to these problems. Over the course of approximately nine months in 2004, the Citizens' Advisory Group on Solid Waste (CAG) met to study waste management issues. The CAG identified three primary problems:

Problem #1: The cost to provide safe MSW landfill disposal services to Wyoming communities will increase appreciably in future years, and much of the cost increase is unnecessary. There are inadequate incentives for cities, towns, and counties to close small landfills and build cost-effective regional landfills.

Problem #2: Wyoming's recycling rate is lower than it should be.

Problem #3: Most Wyoming communities do not have the financial ability to remediate groundwater contamination caused by releases from current and historic unlined MSW landfills. In addition, local financial constraints have significantly delayed the pace of remediation. These delays allow contamination to spread and will significantly increase the ultimate cost of remediation.

The CAG submitted a report to the Governor on October 28, 2004. The conclusions and recommendations from that report were as follows:

First, the CAG recommended that the state should assume responsibility for cleaning up leaking landfills, if the landfill owner does three things: (1) stops receiving municipal solid wastes at the landfill; (2) sends future wastes to a regional solid waste management facility; and (3) pays a fee into a 'leaking landfill remediation account'.

Second, the CAG recommended that the state should establish waste management goals for local governments, but not mandate how those goals are to be met. Included should be goals for establishing regional solid waste services, diverting wastes from landfill disposal, recycling wastes, reusing wastes, and providing safe waste disposal solutions for residents within their jurisdictions. The Advisory Group also recommended that communities should be required to develop plans showing how state waste management goals will be achieved, and that incentives should be provided to encourage local government to plan and to meet state goals.

Third, the CAG recommended that the Department should discontinue its practice of treating smaller community landfills differently than larger landfills.

Fourth, the CAG recommended that a trust account be established to provide financial assurance for remediation of any new regional landfill in the event it releases contamination.

Finally, the CAG recommended that adequate resources and staffing should be provided for the Department to carry out these new programs.

After considering these issues, the Wyoming Legislature passed Senate File number SF0038 – “Solid waste landfill planning and monitoring.” SF0038 contained two principal components. First, grant funds were provided to local governmental entities that own or are responsible for any municipal solid waste landfill to improve groundwater monitoring networks.

Second, all operating municipal landfills were required to prepare an integrated solid waste management plan for their service areas. Grant funds were provided for this work with financial incentives for regional planning. An amount not to exceed ninety percent (90%) of estimated plan preparation costs was provided to the local governmental entity preparing an integrated solid waste management plan for a planning area encompassing three (3) or more local governmental entities. The legislation specified that ISWM plans must address a period of not less than twenty (20) years and specified the general information that needed to be addressed in each plan. The legislation did not mandate planning goals or methodologies, but allowed local control to accommodate local needs and individual situations.

Establishment of Regional Planning Areas

SF0038 required the Department to assess the patterns of generation of municipal solid waste within the state and issue a report identifying those areas of the state where integrated solid waste management plans may be prepared by local governmental entities. The Department, with the assistance of several CAG members, initially recommended 9 planning areas. Preliminary

planning area recommendations were based on political boundaries, geography, and transportation routes. Ultimately, 10 planning areas were formed to address waste management at the 51 municipal landfills actively receiving waste in Wyoming. The final planning areas and participating landfills are listed in Table 1.

Table 1

| Planning Area | Participating Landfills |
|----------------------|--|
| Big Horn Basin | Big Horn North, Big Horn South, Thermopolis, Ten Sleep, Worland |
| Park County | Cody, Clark, Meeteetse, Powell |
| North Central | Buffalo, Gillette, Sheridan |
| North East | Huelett, Moorcroft, Newcastle, Sundance, Upton, Osage |
| West | Bridger Valley, Cokeville, Evanston, Horsethief Canyon, Kemmerer, Marbleton, South End, Thayne |
| Wind River | Dubois, Lander, Sand Draw, Shoshoni |
| East Central (ECPL) | Casper, Douglas, Glenrock, Hanna, Kaycee, Lusk, Manville, Midwest/Edgerton, Rawlins |
| I-80 | Baggs, Eden Valley, Green River, Rock Springs, Saratoga, Wamsutter |
| South East | Burns, Cheyenne, Laramie |
| Eastern WY | Goshen Co., LaGrange, Platte Co., Torrington, Wheatland |

Overall Planning Process

The following discussion is a summary of the general process planners used to address the minimum standards required by SF0038.

Assess current systems

After establishing the planning areas, the next step in the planning process was to assess current systems and services, and determine the real cost of these services. Existing solid waste facilities in Wyoming range from simple systems with little or no waste diversion, where almost all waste is landfilled, to very complex programs which offer enhanced services such as diversion of construction/demolition materials, recycling opportunities and special waste management to minimize the amount of waste that must be landfilled. Assigning costs associated with these widely varying solid waste systems proved to be difficult and time-consuming because many of the landfills do not use full cost accounting methods, therefore it was difficult to find data on real costs. For example, at smaller landfills it is common for communities to share equipment between several departments (streets, parks, landfill, etc.). The cost of this equipment and labor is often not properly apportioned to different departments. This provides a challenge when estimating real costs and ensuring that they are included in current solid waste program operating

cost estimates. One of the more significant issues related to estimating the cost of current systems is the lack of funds set aside for periodic closure of landfill cells once they have reached capacity. In reviewing area plans it became apparent that this deficiency was common in small and large operating facilities. Also, to a lesser extent, equipment replacement and similar needs were not routinely included as part of landfill budgets.

Consider objectives, evaluate system options and alternatives, and evaluate funding alternatives

With a better understanding of current systems and their real costs in hand, local governments moved forward to identify local objectives for waste management. Objectives included things such as improving and enhancing recycling opportunities, minimizing costs, adding services, and ensuring that users pay their fair share of the cost.

Local governments then evaluated the alternatives that could help meet their objectives and assessed the cost of these alternatives. In addition to the basic question about lining or closing landfills and transferring waste to a regional landfill, communities considered many other alternatives such as:

- Whether or not to haul waste directly from households to a regional landfill or to build a transfer station.
- If a transfer station was selected, communities considered which services it should it provide; balers, recycling, composting, etc.
- Alternatives for different waste types such as construction demolition debris, electronic waste, dead animals, scrap tires, contaminated soil, household hazardous waste, yard waste, etc.
- Some planning areas considered alternatives for contractual agreements with surrounding communities.
- Alternatives for funding.

Economic analysis

Analyzing the cost of alternatives was the more detailed and time consuming part of the planning process. Table 2 below summarizes the cost estimates provided in the plans for the primary alternatives considered; remaining open or closing and transporting waste to a regional landfill. This information is also presented in Figure 1 below.

Table 2
Summary of Alternatives and Cost Estimates

| Select Alternatives | Annual Tonnages | Status Quo or Maintain Current Operation | Continue Operating with a Liner System | Transfer MSW to a Lined Regional Landfill |
|------------------------------|----------------------------|---|---|--|
| Planning Area | <i>Estimated or Actual</i> | <i>Estimated Cost Per Ton</i> | <i>Estimated Cost Per Ton</i> | <i>Estimated Cost Per Ton</i> |
| West Region | | | | |
| Bridger Valley | 5,539 | \$59 | N/A | \$69 |
| Evanston | 16,950 | \$43 | \$69 | \$60 |
| Uinta County (combined) | 22,489 | \$48 | \$101 | \$86 |
| Cokeville | 439 | \$27 | N/A | \$104 |
| Kemmerer | 14,961 | \$30 | N/A | \$57 |
| South End | N/A | N/A | N/A | N/A |
| Thayne | 11,670 | \$47 | N/A | \$99 |
| Lincoln County (combined) | 27,070 | \$45 | \$82 | \$80 |
| Lincoln County (regional LF) | 49,559 | N/A | \$60 | N/A |
| Marbleton | 12,979 | \$46 | \$65 | \$155 |
| Horse Thief Canyon | 29,098 | \$57 | N/A | \$74 |
| Park County | | | | |
| Park County (combined) | 28,600 | \$60 | \$114 | \$152-\$205 |
| Cody | 17,000 | \$60 | \$120 | \$114 |
| Clark | 1,000 | N/A | N/A | N/A |
| Meeteetse | 600 | N/A | N/A | N/A |
| Powell | 10,000 | \$60 | \$207 | \$129-\$172 |
| Wind River | | | | |
| Fremont County (combined) | 46,114 | \$104 | \$120 | \$154 |
| Dubois | 541 | \$99 | N/A | \$98 |
| Lander | 18,611 | \$75 | N/A | N/A |
| Sand Draw | 24,845 | \$74 | \$120 | \$154 |
| Shoshone | 2,117 | \$72 | N/A | \$144 |
| I-80 | | | | |
| Baggs | 4,343 | \$108 | \$208 | \$207 |
| Eden Valley | 917 | \$150 | N/A | \$220 |
| Green River | 12,333 | \$36 | \$75 | \$42 |
| Rock Springs | 58,335 | \$22 | \$47 | \$37 |
| Saratoga | 4,613 | \$60 | \$177 | \$151 |
| Wamsutter | 4,948 | \$119 | \$202 | \$182 |

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|----------------------------|----------------------------|--|--|---|
| Planning Area | <i>Estimated or Actual</i> | <i>Estimated Cost Per Ton</i> | <i>Estimated Cost Per Ton</i> | <i>Estimated Cost Per Ton</i> |
| Big Horn Basin | | | | |
| Big Horn North + South | 9,435 | \$89 | \$170 | \$130 |
| Thermopolis | 4,900 | \$82 | \$146 | \$119 |
| Ten Sleep | 732 | \$182 | \$370 | \$179 |
| Worland | 7,761 | \$79 | \$127 | N/A |
| North Central | | | | |
| Sheridan | 47,910 | \$76 | \$76 | N/A |
| Buffalo | 9,494 | \$80 | \$145 | \$145 |
| Gillette | 60,244 | \$68 | \$68 | N/A |
| North East | | | | |
| Hulett | 600 | \$93 | \$130 | \$93 |
| Moorcroft | 1599 | \$83 | \$185 | \$171 |
| Newcastle | 4,930 | \$70 | \$145 | \$137 |
| Sundance | 2111 | \$48 | \$139 | \$129 |
| Upton | 1,648 | \$46 | \$162 | \$149 |
| Osage | 466 | \$109 | \$508 | \$305 |
| East Central | | | | |
| Casper | 139,070 | \$43 | \$30 | N/A |
| Midwest/Edgerton | 643 | \$160 | N/A | \$105 |
| Kaycee | 412 | \$285 | N/A | \$279 |
| Glenrock | 7,539 | \$85 | N/A | \$127 |
| Douglas | 8,549 | \$85 | \$155 | \$143 |
| Lusk | 1,753 | \$114 | \$278 | \$155 |
| Manville | 127 | \$83 | N/A | \$319 |
| Rawlins | 20,350 | \$35 | \$96 | \$63 |
| Hanna | 1,931 | \$123 | N/A | \$202 |
| Eastern | | | | |
| Goshen County | N/A | N/A | N/A | N/A |
| LaGrange | 200 | \$127 | \$348 | \$127 |
| Platte County | N/A | N/A | N/A | N/A |
| Torrington | 7,366 | \$98 | \$110 | \$65 |
| Wheatland | 5,258 | \$97 | \$117 | \$109 |

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|----------------------------|----------------------------|---|---|--|
| Planning Area | <i>Estimated or Actual</i> | <i>Estimated Cost Per Ton</i> | <i>Estimated Cost Per Ton</i> | <i>Estimated Cost Per Ton</i> |
| South East | | | | |
| Laramie | 48,253 | \$19 | \$42 | \$62 |
| Cheyenne | 121,120 | \$57 | \$82 | \$56 |
| Burns | 3,873 | \$67 | \$135 | \$139 |
| Averages | | \$80 | \$146 | \$132 |

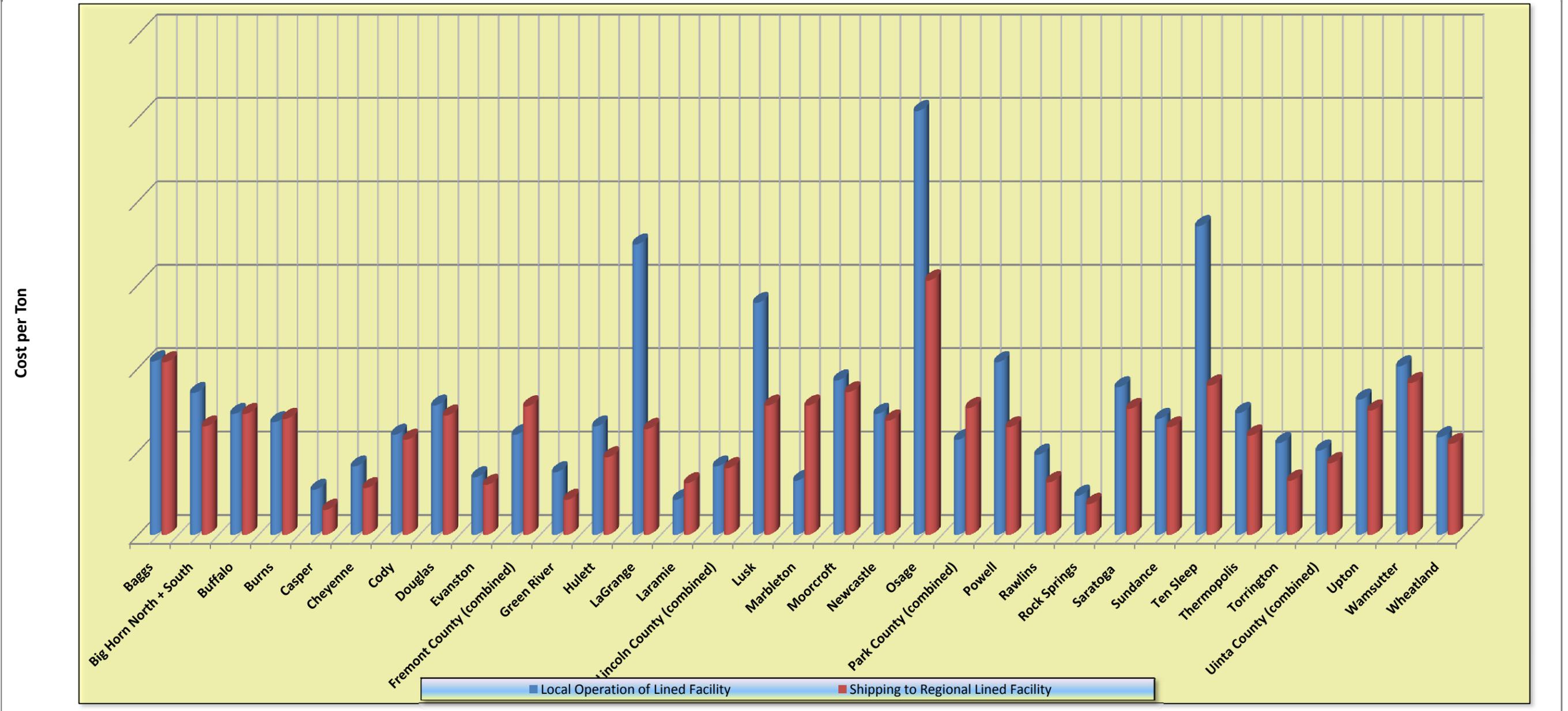
Note: The estimates above were compiled from numerous alternatives provided in the regional plans. The costs selected were generally the lowest cost estimates in each category although in some cases the costs for preferred alternatives were used. In order to fully understand these costs it is necessary to review the planning documents in detail.

N/A = Not applicable or not evaluated for reasons such as the landfill has insufficient remaining capacity, does not plan to receive waste in the future, or the option was not considered for other reasons.

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Figure 1

Comparison of Cost per Ton for Operating a Lined Local Facility vs Shipping to Lined Regional Facility



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SF0038 did not mandate methodologies; therefore costs were estimated using different methods. The cost estimates vary from one landfill to another and one planning area to another and are not directly comparable. Each plan needs to be reviewed individually and in detail to understand the assumptions that were made and the impact these assumptions will have on plan implementation. When comparing the cost estimates, the factors below should be considered:

- Most cost estimates were generic rather than site-specific.
- There were a variety of assumptions made about funding methods.
- In many cases, current budgets do not account for significant costs such as landfill closure and equipment replacement. This can result in a substantial under-estimation of current operating costs; affecting comparisons between the cost of alternatives.
- Accounting methods and cost assumptions varied between planning areas and consultants. In most cases consultants estimated future costs, including currently unfunded obligations. In some cases where lifecycle cost evaluations were used, currently unfunded obligations may not be reflected in present and future cost estimates.
- Consultants indicated that cost estimates were “high altitude” and “budgetary” in nature. When cost estimates are refined, actual costs may be less than current estimates.
- Different needs and goals in different communities result in different costs, therefore no two systems are exactly alike and costs aren’t comparable between facilities.
- Many of the cost estimates were for a high level of service and large, well appointed facilities, which may not be necessary. If less expensive alternatives are selected, actual costs may be less.
- Plans were prepared when fuel costs were high, with costs ranging from \$2.25-\$6.00 per gallon. Therefore, transportation cost estimates are variable and may be high in some cases.
- Cost estimates generally do not include the potential cost of remediation at landfills where pollution has been detected.
- Many plans assume communities will cease receipt of municipal waste, but maintain local construction/demolition (CD) waste disposal. Maintaining a CD landfill retains much of the local disposal costs, including equipment, monitoring, closure, etc. Most plans did not compare the cost of continued CD disposal to the cost of completely closing their landfills and transporting that CD waste to a regional landfill.
- Cost may not be the only factor affecting the selection of alternatives. Local control and other local issues may play a role. For example, communities may be unwilling to accept the potential liability of disposal in unlined landfills, even though the cost may be less than disposal in a lined landfill.

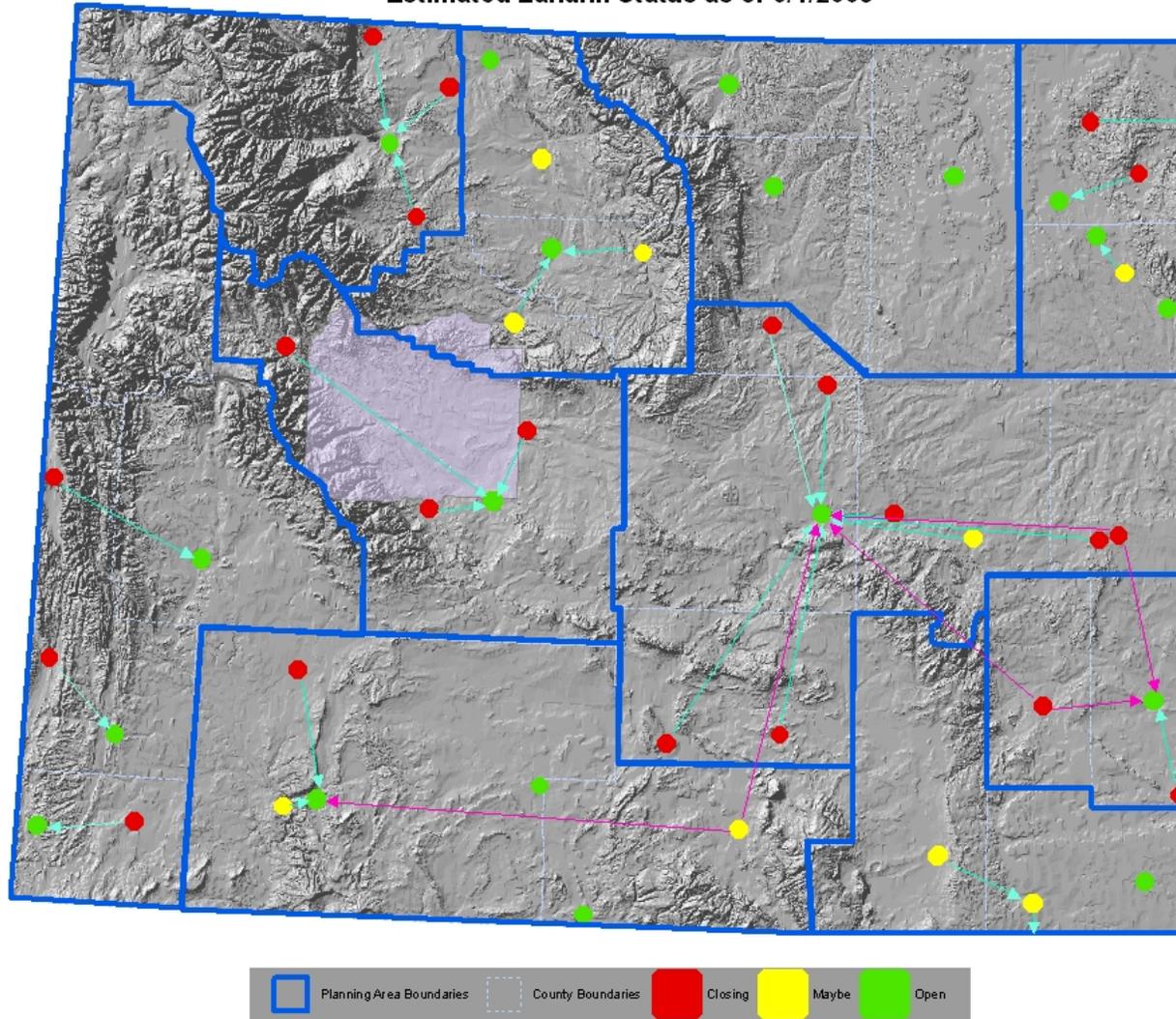
Implementation

Changes will be implemented over time as landfills reach capacity and close. Some landfills have capacity for just a few years and others have 10-20 years of remaining life. Some communities will need to implement changes now, but in other areas it is too soon to make final implementation decisions because circumstances may change. As stated above, more refined evaluations of alternatives and their cost will be needed before final alternatives are selected and implemented.

Planning around the state is in various stages of implementation. Due to planning efforts, discussions between local governments have started, but many communities have not finalized decisions about regional disposal and other alternatives. Currently, 51 landfills are receiving municipal solid waste in Wyoming. The information provided to date suggests that within about 10 years, 18 of those landfills are expected to close. The operating status of 9 landfills is undecided at this time. Ultimately, 24-33 landfills are expected to remain open. Figure 2 illustrates potential landfill closures around the state. Turquoise arrows on the figure indicate the primary location a community is considering for waste disposal. Fuchsia arrows indicate multiple disposal options being considered by a community.

Figure 2

Solid Waste Management Planning Process
Estimated Landfill Status as of 6/1/2009



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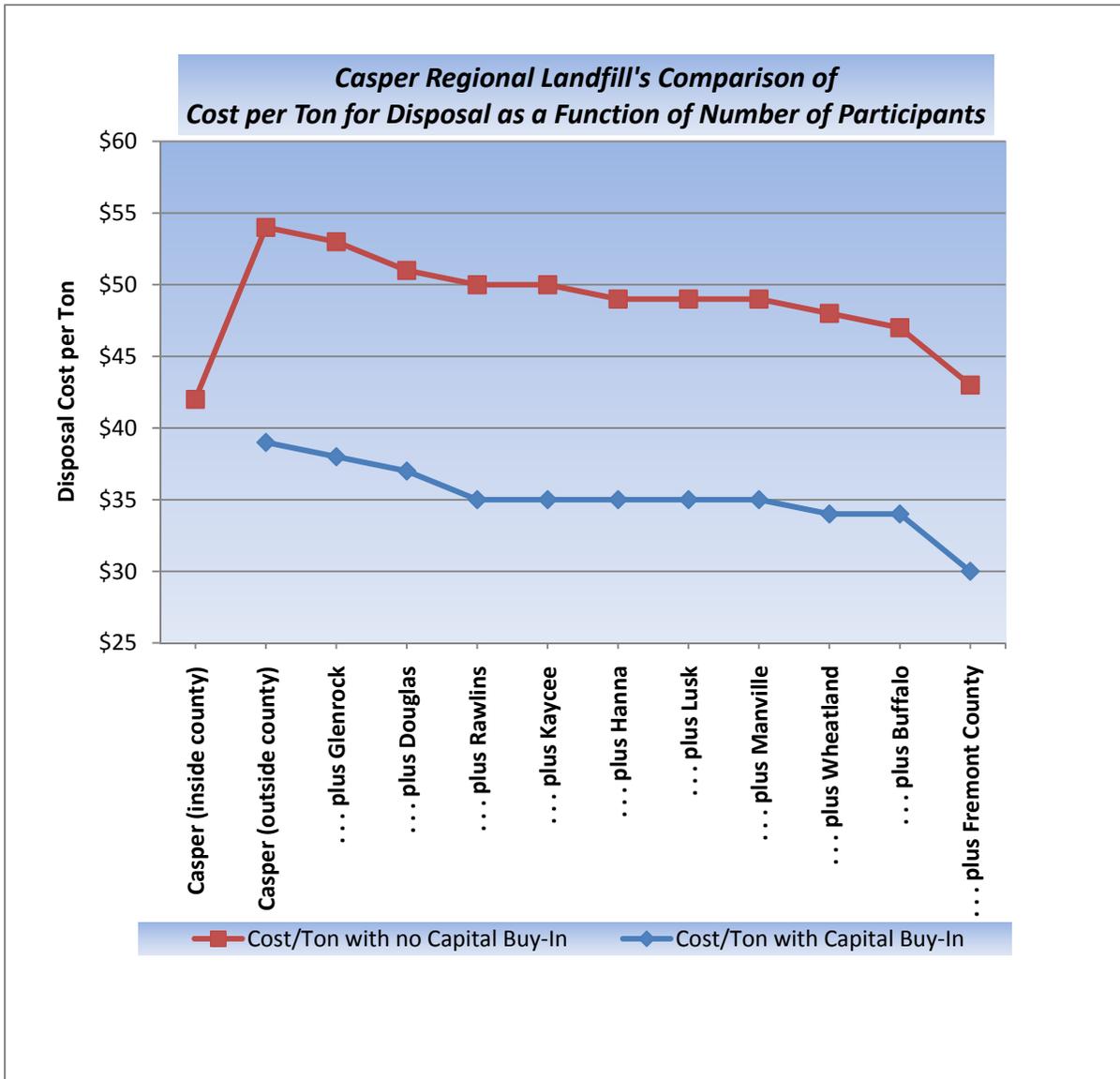
The East Central Planning Area (ECPL) provides an example of regional implementation. The ECPL prepared information demonstrating the potential economies of scale realized under various levels of regional participation. Table 3 and Figure 3 below show the estimated costs. Casper estimated disposal costs based on two scenarios. In the first scenario, “no buy-in” customers outside Natrona County pay their share of construction costs through their tipping fees. In the second scenario, “buy-in” customers outside Natrona County pay their share of construction costs up front based on their percentage of waste hauled to the Regional Landfill. The buy-in customers are guaranteed the same rate as Natrona County and Casper customers. Glenrock, Midwest and Kaycee have already decided to participate, but decisions are pending in other communities.

Contracts in the ECPL address more than just waste disposal. Regional services include electronic waste recycling, household hazardous waste collection and disposal, acceptance of animals and tires mixed with MSW, acceptance of small quantities of medical wastes, acceptance of wastewater treatment plant biosolids, petroleum contaminated soil, industrial wastes, and grinding tree branches.

Table 3
East Central Planning Area
Regional Implementation Cost Comparisons

| Participant | Disposal cost/ton with no capital buy-in | Disposal cost/ton with capital buy-in |
|--|---|--|
| Casper (inside county) | \$42 | |
| Casper (outside county) | \$54 | \$39 |
| Casper & Glenrock | \$53 | \$38 |
| Casper, Glenrock, & Douglas | \$51 | \$37 |
| Casper, Glenrock, Douglas, & Rawlins | \$50 | \$35 |
| Casper, Glenrock, Douglas, Rawlins, & Kaycee | \$50 | \$35 |
| Casper, Glenrock, Douglas, Rawlins, Kaycee, & Hanna | \$49 | \$35 |
| Casper, Glenrock, Douglas, Rawlins, Kaycee, Hanna, & Lusk | \$49 | \$35 |
| Casper, Glenrock, Douglas, Rawlins, Kaycee, Hanna, Lusk, & Manville | \$49 | \$35 |
| Casper, Glenrock, Douglas, Rawlins, Kaycee, Hanna, Lusk, Manville, & Wheatland | \$49 | \$34 |
| Casper, Glenrock, Douglas, Rawlins, Kaycee, Hanna, Lusk, Manville, Wheatland, & Buffalo | 47 | \$34 |
| Casper, Glenrock, Douglas, Rawlins, Kaycee, Hanna, Lusk, Manville, Wheatland, & Fremont County (Wind River area) | \$43 | \$30 |

Figure 3



As alternative services are investigated in more detail and plans are implemented, local governments will be considering several factors. These include:

- The potential to reduce direct charges to the public using a combination of funding mechanisms – mill levy, tipping fee, consensus funds, 1 cent capital facilities taxes, etc.
- Using scales that could help measure waste volumes and assess fees to those using services the most.
- Improvements in the diversion/recycling of CD waste that could eliminate the need for local disposal and could further reduce costs.
- Full Cost Accounting (FCA) methods.
- Unit-based/variable-rate pricing approaches like “Pay as You Throw” (PAYT) also known as “Save Money and Reduce Trash” (SMART)
- Reassessing alternatives and preparing detailed site specific cost assessments when circumstances change or where initial plans have not done so.
- Building on these reports with more detailed investigations into opportunities for additional regional services, not just regional landfills. For example, additional savings could be realized by sharing common hauling equipment, sharing common recycling trailers for remote areas, etc.
- Evaluating long-term cost savings that may occur beyond the current planning period before making final decisions about alternatives. For example, one-time transfer station construction cost may be less expensive in the long run than the ongoing cost of landfill construction, operation, monitoring, closure and post-closure care.

Conclusions

The planning process has identified problems that many local governments are struggling with and identified alternatives for potential solutions. It will take time for communities to select and implement alternatives. Implementation schedules will be affected by local factors such as the amount of remaining landfill capacity and the availability of funding.

Consultants have indicated that the cost estimates contained in the plans are high and generally assume higher than necessary levels of service. The cost estimates will need to be refined before final decisions are made and as circumstances change. Nevertheless, the cost estimates indicate that costs are proportionately higher for small communities and that economies of scale can make regional waste management approaches cost effective. Public participation will be an important component of future planning and implementation decisions. Public preferences may affect the alternatives selected and their final cost.

The reports also indicate that most communities will need to raise the rates currently charged for waste management services. The primary reasons identified for the rate increases include:

- Insufficient funds have been set aside for existing needs such as equipment replacement, the full cost of landfill operation, and closure of existing landfill cells.
- Insufficient funds are available to monitor existing landfills and new landfill cells, especially throughout post-closure periods that can last for 30 years or more.
- Insufficient funds are available to address pollution identified at a growing number of landfills.
- Additional funds will be needed for the construction and operation of engineered containment systems in future disposal areas.
- Insufficient funds are available to implement the changes identified by the planning process; including one-time capital costs to construct a transfer stations so waste can be transported to a regional landfill.

Barriers to implementation have been identified; funding is chief among them. In many areas, financial limitations will make it difficult for local governments to implement desired changes. This is especially a problem at landfills that will reach capacity soon and have very little time to finance selected alternatives.

Ultimately, waste management affects us all because we all generate waste. It will be important to maintain existing partnerships and foster new ones. The Department plans to continue working with the Wyoming Solid Waste and Recycling Association, The Citizens' Advisory Group on Solid Waste, local and state government officials, and the public to facilitate improved solid waste management and environmental protection in Wyoming.

The planning process has captured the actual costs of dealing with solid waste today and in the future. The costs to bring landfills into compliance with state and federal environmental regulations were also identified. Although more analysis by local leadership is required to accurately portray the magnitude of these costs and to select alternatives that make sense for their citizens, a major step forward has taken place with regard to managing solid waste.

END