# Report to the Vermont Legislature:

# Act 148 Implementation

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VERMONT

AGENCY OF NATURAL RESOURCES

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**I. Authority and Scope:**

In May of 2012 the Vermont General Assembly unanimously enacted a Universal Recycling law (Act 148), the most substantial update to Vermont's solid waste management system in nearly 25 years. Act 148 includes an ambitious package of reforms aimed at reducing the amount of solid waste the state sends to landfills while maximizing recycling and composting. In order to mitigate the serious health and environmental risks associated with our ever-increasing generation of trash, Act 148 would treat much of what we think of as waste as misdirected resources. In semantic terms, Act 148 recasts waste management as "materials management." In practical terms, the act mandates a transition to universal recycling by phasing out disposal of recyclables, yard debris and food residuals, implementation of parallel recycling and composting, and adoption of a pay-as-you-throw system.

Act 148 also requires the Agency of Natural Resources (ANR or the Agency) to perform a number of assessments and evaluations, including a system-wide analysis of the volume and nature of wastes generated in the state, the source of the waste, and the current fate or disposition of the waste. Additionally, the law requires ANR to submit to the House and Senate Committees on Natural Resources and Energy a report addressing solid waste management in the state, including an analysis on waste, cost, local governance, infrastructure, and natural resources.[1] Act 148 also requires ANR to submit a report on the costs and benefits of expanding the current beverage container redemption system (Bottle Bill) to include containers for all noncarbonated beverages,[2] to be accomplished by examining the single stream system in relation to a system where the Bottle Bill is repealed, remains unchanged, or expanded. Following completion of these analyses, ANR is directed to prepare legislative recommendations setting forth legislative and/or regulatory changes necessary to promote the Act 148 goal of reducing waste by increasing diversion of recyclable and organic materials.

ANR contracted with private vendors to complete these comprehensive analyses. DSM Environmental Services, Inc., in conjunction with subcontractors Tellus Institute and Robert Spencer, was retained for the *Systems Analysis of the Impact of Act 148 on Solid Waste Management in Vermont* (*Systems Analysis*).[3] DSM Environmental Services, Inc. and subcontractor MidAtlantic Solid Waste Consultants were retained for the *State of Vermont Waste Composition Study* (*WCS*).[4] ANR provided the remaining analyses not addressed in these two reports, in addition to preparing the recommendations required under Sections 12 and 18 of Act 148.

**II. Synopsis of Act 148:**

The impetus for Act 148 was the stagnating rate of waste diversion (30 – 36%) in Vermont over the past decade. Additional concerns prompting legislative action included the types and amounts of materials being disposed, greenhouse gas emissions from landfilled organic material, and limitations on state landfill space. A recent statewide waste composition study[5] shows that over half of the materials placed into landfills are recyclables, leaf and yard debris, and food scraps that could be diverted and put to better use. Moreover, landfilling these materials (especially food scraps) contributes to climate change by producing methane, a potent greenhouse gas.

Thus, Act 148 seeks to improve the capture and diversion rates for these valuable materials to prevent them from being landfilled. By phasing out landfilling of certain materials (recyclables, food scraps, and leaf and yard debris), ensuring parallel collection (collection of these materials at the same location as trash collection), and incentivizing diversion

[1] Act 148. Section 12. ANR report on solid waste.
[2] Act 148. Section 18. ANR report on the costs and benefits of expansion of the beverage container redemption system.
[3] DSM Environmental Services, Inc., Tellus Institute, and Robert Spencer. *Systems Analysis of the Impact of Act 148 on Solid Waste Management in Vermont*. 2013.
http://www.anr.state.vt.us/dec/wastediv/solid/documents/finalreportvermontwastecomposition13may2013.pdf
[4] DSM Environmental Services, Inc., and MidAtlantic Solid Waste Consultants. *State of Vermont Waste Composition Study*. 2013.
http://www.anr.state.vt.us/dec/wastediv/solid/documents/finalreportvermontwastecomposition13may2013.pdf
[5] DSM Environmental Services, Inc. *Vermont Waste Composition Study, 2013.*
http://www.anr.state.vt.us/dec/wastediv/solid/documents/finalreportvermontwastecomposition13may2013.pdf

through variable rate pricing (commonly defined as "pay-as-you-throw"), more of these materials can be diverted from the landfill.

Act 148 also seeks to provide increased choices and convenience to Vermont residents and businesses, leading to more consistent statewide solid waste services such as recycling and composting. By requiring separation and diversion of materials (waste, recycling, organics), the law creates an incentive to invest in materials management strategies. Finally, implementation of the law is phased over nearly a decade, allowing time to establish collection services and processing facilities for managing mandated recyclables and food, leaf, and yard materials. (*See* Appendix A).

**III. ANR Recommendations – Summary:**

A summary of ANR responses to the directives in Act 148 is provided below (ANR responses in *italics*):

1. Adopting a "solid waste management plan," due November, 2013, then every five years. *The Materials Management Plan (MMP) will be submitted to Interagency Committee on Administrative Rules on November 25th.*
2. Conducting an "assessment of solid waste management," including:
    a. "A waste analysis (determine the portion of various wastes/materials that are disposed)." *The WCS completes this requirement, found at: http://www.anr.state.vt.us/dec/wastediv/solid/documents/finalreportvermontwastecomposition13may2013.pdf. (**no legislative action required**)*
    b. "Effectiveness of EPR programs (the bottle bill, mercury lamps, and the e-waste)." *ANR reviewed existing extended producer responsibility (EPR) programs, finding all effective. ANR will initiate a stakeholder process on potential future uses of EPR and report to the legislature by January 15, 2015. (**no legislative action required**)*
    c. "Evaluation of the cost and infrastructure of the existing system and one needed to meet the requirements of the bill."
        i. *Following review of the systems analyzed in the Systems Analysis report, ANR recommends full implementation of Act 148, maintaining the existing Bottle Bill, and continuing to support single, dual, and source separated sorting strategies. (**no legislative action required**)*
        ii. *To conform with Act 148, ANR recommends a level playing field for all commercial haulers collecting municipal solid waste by enacting legislation that requires haulers with vehicles less than one ton to register as solid waste transporters.*
        iii. *Act 148 was passed without funding. $37 million is needed over the next nine years to support organics processing infrastructure and capital retrofits to collect both recyclables and organics. ANR recommends consideration of establishing a grants/loans program to assist needed private and public sector capital investments. The program could be funded through an increase in the per ton franchise fee that was set in 1987 on waste transferred or disposed of in Vermont.*
    d. "Evaluation of local governance (solid waste districts and towns)."
        i. *There are 10 solid waste districts, 6 alliances or groups of towns, and 16 independent towns with approved Solid Waste Implementation Plans (SWIPs), and five towns with no approved plan. To effectively implement Act 148 and implement the benchmarks in the MMP, ANR recommends that all municipalities join a solid waste district.*
        ii. Under Act 148 municipalities are required to establish variable rate pricing (also known as unit based pricing or pay-as-you-throw). *ANR will develop a guidance document setting minimal standards for variable pricing in 2014. (**no legislative action required**)*

3. Analyzing the "impacts to natural resources and the environment." *ANR recommends Act 148 be implemented as passed by the legislature, resulting in an estimated 79% increase in recyclables and organics diversion, and a 37% decrease in greenhouse gas production. (**no legislative action required**)*

## IV. ANR Recommendations – Narrative:

### A. Implement Act 148

The *Systems Analysis* and *Waste Composition* studies provide extensive detail on the amount and character of materials in Vermont's waste stream (materials being sent to the landfill) and the environmental benefits of diverting recyclable and organic materials. Based on these two reports, as supplemented by ANR's own analysis, the Agency recommends full implementation of Act 148 requirements adopted by the 2012 Vermont General Assembly.

This conclusion is based on the fact that Act 148 implementation is anticipated to result in a potential 79% increase in recyclables and organics diversion, as well as achieving a potential 37% decrease in greenhouse gas (GHG) production as compared with the existing solid waste management system. Statewide waste diversion has remained stagnant at 30-36% for the last decade. Act 148 provides an opportunity to break that glass ceiling and increase overall diversion to 47%.

### B. Further Utilize Extended Producer Responsibility Strategies

Extended producer responsibility (EPR) requires that a producer's responsibility for its products and packaging extend to post-consumer management. This shifts the financial and management responsibility, with government oversight, from the public to the consumers and producer, providing incentives to producers to consider the environment in the design of their products and packaging. Existing Vermont EPR programs include: fluorescent (mercury) lamps and thermostats, electronics, automobile switches, dry cell batteries and paint. A voluntary Product Stewardship (PS) program collects rechargeable batteries (lead and nickel cadmium) which are landfill banned. The oldest product stewardship program in Vermont is the Bottle Bill, which has been in existence for more than 40 years.

Vermont's EPR programs have been effective diverting toxic materials from landfills and providing convenient options for Vermonters. In the first year following implementation of the mercury lamp EPR program, 37% of mercury lamps were recycled, which is significantly higher than the national average of less than 5%. In 2012, 25 pounds of mercury were recovered by the thermostat EPR program. As a result of thermostat program, Vermont has the highest per capita rate of recycling in the nation for thermostats. Following implementation of the electronic waste EPR program enacted in 2010, 4.8 million pounds of covered electronic devices were collected during the first year of the program. This exceeds the legislative goal of 3.4 million pounds per year, and it represents a higher per capita rate of collection than any other state. For bottle bill materials, while only 2% of the waste stream, the current rate of return is approximately 75%. No statistics are available yet for Vermont's paint recycling law, which was passed in 2013 and will be implemented in 2014.

However, there are still critical components of the waste stream to consider for management through EPR. For example, the *System Analysis* report notes that over 100,000 tons of paper and packaging materials have been landfilled, even though this is material which could have been captured in the current recycling system. (*See* Appendix D). ANR will host a stakeholder process over the next year to direct legislative consideration of additional programs to increase diversion of difficult to manage materials and offset the expenses incurred by municipal solid waste districts and taxpayers. As Act 148 is implemented ANR will collect recycling data to determine if there is a need to modify the Bottle Bill. That determination will be based on universal recycling collection rates of similar materials and future waste composition studies.

## C. Promote District Governance for Effective Implementation

There are 37 different municipal solid waste management entities operating in Vermont (*See* Appendix B). With the requirements of the solid waste management plan (now the Materials Management Plan (MMP)) in place, many individual towns have chosen to come together (as Districts, Alliances, or Groups) to partner and share financial responsibility to provide services to their citizens.

The MMP is an Act 148 implementation guide for solid waste management entities (including solid waste districts, groups/alliances, and independent towns). Solid waste districts are governed by the charters they submit to the general assembly, granting them municipal authority. Groups/alliances are towns that have partnered to address solid waste issues, but are not chartered. Independent towns have not chosen to partner with other cities and towns. All are required to submit a SWIP to ANR, demonstrating their ability to implement Act 148. ANR, directed by Act 148, establishes enforceable statewide goals and municipal performance measures in the MMP. ANR also provides assistance to towns through solid waste implementation grants, and by sharing technical information as well as outreach and education materials.

*All Municipalities Should Join a District*

While a number of the solid waste management districts are high performing solid waste authorities, others provide only the minimum services required. Adopted in 1987, Act 78 instigated the closure of most unlined landfills, established recycling goals, and required the development of the solid waste management plan. It also initiated the formation of the solid waste management entities. This has resulted in the high number of solid waste management entities, varying performance, and inconsistent and inconvenient services. Consequently, ANR recommends that the legislature adopt legislation that requires all towns in Vermont to be a part of a District. This would impact 16 independent towns with Solid Waste Implementation Plans (SWIPs) and five towns without approval as well as municipalities that are a part of an Alliance or Commission that are not municipal corporations themselves. This requirement would allow for pooled resources for education and outreach, as well as lower administrative costs.[6] It would increase the likelihood that these municipalities are able to implement Act 148.

*ANR Guidance on Unit Based Pricing*

As Act 148 is written, municipalities are required to establish variable rate pricing (also known as unit based pricing or pay-as-you-throw). There are many types of variable rate pricing systems that can effectively incentivize waste reduction and increase diversion rates. In order to prevent variable rate pricing programs from (i) missing the intent of the legislation or (ii) setting an inaccurate baseline price point, ANR will develop a variable rate pricing guidance document, setting minimal standards for municipalities, in 2014.

## D. Level the Playing Field

Act 148 currently exempts commercial haulers with collection vehicles that have a one ton curbside rating or less. Unless removed from the law, this exemption will allow a subset of commercial haulers to avoid compliance with the recycling and organics collection benchmarks if they meet the one ton exemption. A number of solid waste districts require any hauler transporting municipal solid waste for commercial purposes to be registered. This requirement not only provides for greater tracking and analysis of the waste management system at the local and state level, it also

[6] DSM Environmental Services, Inc. *Systems Analysis for the Impact of Act 148 on Vermont*. 2013. P. 83.

enables equitable enforcement when services are not provided as Act 148 dictates. ANR recommends eliminating the one ton exemption.

**E. Fund New Universal Recycling and Organics Infrastructure**

Act 148 passed without funding for implementation. The *Systems Analysis* report estimates that $20 million is needed over the next 9 years to support organics processing infrastructure, and another $17 million is needed for trucks and carts to collect both recyclables and organics. Much of this investment will be by the private sector, with additional investments and funding from solid waste districts. The state could provide support and seed money to help instigate and guide strategic investments furthering the goals of Vermont's Universal Recycling law.

One option for raising state funds that could be passed on to the private sector and solid waste districts would be to increase the franchise fee created in 1987 to fund a grants/loans program for private and public sector equipment investments necessary for implementation of Act 148. This type of assistance would be similar to the funding made available after Act 78 was passed approximately 25 years ago. Vermont's solid waste franchise fee is collected based on the tonnage disposed of in the landfill. In 1987 it was set at $6 per ton, creating the Solid Waste Management Assistance Fund. The Consumer Prices Index has doubled since. If the franchise fee was increased to $12 per ton, $3.3 million in additional revenue would be generated that could be directed into a dedicated grants/loans program. Moreover, the additional cost to Vermonters would be modest: based on an estimated per capita disposal rate in Vermont of 0.66 tons/year, the additional cost per individual would be less than $4 per year.

**F. System Recommendation: Implement Act 148 With Bottle Bill & Dual/Single Stream Sorting**

The *Systems Analysis* report reviews Vermont's current waste management system (base case, or System 1), the implementation of Act 148 without the Bottle Bill (System 2), with the Bottle Bill (System 3), and with an expanded Bottle Bill (System 4). As Act 148 does not require single stream recycling, System 3A considers dual and source separation processing systems for recycling that are currently operating in Vermont. (*See* Appendix C).

Following review of these systems for materials management, ANR recommends implementation of Act 148 implementation without expanding or contracting the Bottle Bill (System 3A) at this time. This system is anticipated to achieve a 37% reduction in greenhouse gas emissions and a 79% increase over the status quo in recycling and organics diversion. It supports single, dual stream, and source separated sorting strategies currently implemented throughout the state. With regard to the Bottle Bill, the decision whether or not to modify its current scope should be considered when the state has longitudinal data on the rate of recycling following implementation of Act 148.

**APPENDIX A: Timeline of Act 148 Implementation Dates**


# Universal Recycling
## TIMELINE

**JULY 1 2014**

- Transfer stations/Drop-off Facilities must accept residential recyclables at no extra charge
- Food scrap generators of 104 tons/year (2 tons/week) must divert material to any certified facility within 20 miles

**JULY 1 2015**

- Statewide unit based pricing takes effect, requiring residential trash charges be based on volume or weight
- Recyclables are banned from the landfill
- Transfer stations/Drop-off Facilities must accept leaf and yard debris
- Haulers must offer residential recycling collection at no extra charge
- Public buildings must provide recycling containers alongside all trash containers in public spaces (exception for restrooms)
- Food scrap generators of 52 tons/year (1 ton/week) must divert material to any certified facility within 20 miles

**JULY 1 2016**

- Leaf, yard, and clean wood debris are banned from the landfill
- Haulers must offer leaf and yard debris collection
- Food scrap generators of 26 tons/year (1/2 ton/week) must divert material to any certified facility within 20 miles

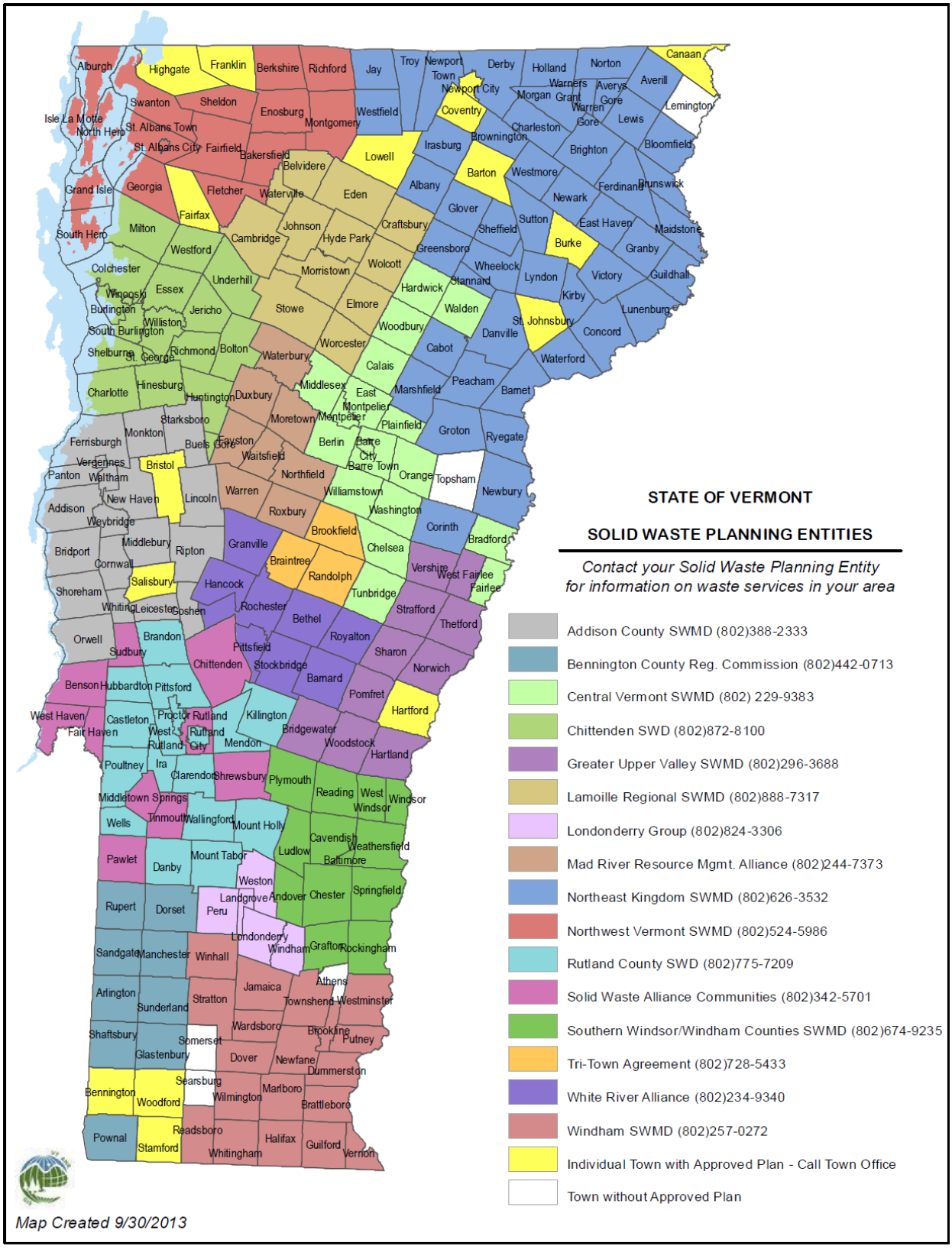
**JULY 1 2017**

- Transfer stations/Drop-off Facilities must accept food scraps
- Haulers must offer food scrap collection
- Food scrap generators of 18 tons/year (1/3 ton/week) must divert material to any certified facility within 20 miles

**JULY 1 2020**

- Food scraps are banned from the landfill

## APPENDIX B: Map of Solid Waste Management Entities



**APPENDIX C**: **Summary of materials recovery, GHG emissions, and system costs with implementation of Act 148 (*Systems Analysis*, p. 140, Table 59)**

| SYSTEMS EVALUATION | SYSTEM 1 | SYSTEM 2 | SYSTEM 3 | SYSTEM 3A | SYSTEM 4 |
|---|---|---|---|---|---|
| **Metrics** | **Base Case, No Act 148** | **Act 148, Universal Single Stream, No BB** | **Act 148, USS, BB** | **Base Case With Act 148,BB** | **Act 148, USS, EBB** |
| **Diversion, in Tons (2022)** | | | | | |
| Materials | | | | | |
| Plastic | 5,120 | 5,580 | 5,870 | 5,753 | 7,190 |
| Aluminum | 2,300 | 1,750 | 2,680 | 2,626 | 2,760 |
| Glass | 23,880 | 16,320 | 24,000 | 23,520 | 25,080 |
| Fiber | 60,570 | 87,560 | 87,560 | 85,809 | 87,560 |
| Steel Cans | 1,620 | 1,690 | 1,690 | 1,656 | 1,690 |
| Organics | 0 | 48,098 | 48,098 | 48,098 | 48,098 |
| ***Total:*** | 93,490 | 160,998 | 169,898 | 167,462 | 172,378 |
| ***Percent Increase over Base:*** | ***na*** | 72% | 82% | 79% | 84% |
| **GHG Emissions Reductions** | | | | | |
| ***Total, in Metric Tons Carbon Equivalent:*** | (70,019) | (93,568) | (96,597) | (96,000) | (97,293) |
| ***Percent Decrease over Base:*** | ***na*** | 34% | 38% | 37% | 39% |
| **Sum of Annual System Costs (2014 - 2022)** | | | | | |
| Operating | $ 1,357,405,811 | $ 1,350,218,700 | $ 1,441,033,746 | $ 1,449,314,157 | $ 1,475,387,582 |
| Capital | $ 1,900,000 | $ 42,450,455 | $ 42,427,062 | $ 45,467,476 | $ 42,414,492 |
| ***Total*** | ***$ 1,359,305,811*** | ***$ 1,392,669,154*** | ***$ 1,483,460,808*** | ***$ 1,494,781,633*** | ***$ 1,517,802,074*** |
| ***Change in Total System Cost over Base:*** | ***na*** | ***$ 33,363,344*** | ***$ 124,154,997*** | ***$ 135,475,823*** | ***$ 158,496,264*** |
| ***Percent Change from Base:*** | ***na*** | 2% | 9% | 10% | 12% |
| **Unit Costs (2022)** | | | | | |
| Average Per HH Monthly Cost | $ 33.29 | $ 34.98 | $ 36.70 | $ 38.07 | $ 37.30 |
| ***Percent Change from Base:*** | ***na*** | 5% | 10% | 14% | 12% |
| Average Per Ton Cost, ICI | $ 202 | $ 206 | $ 221 | $ 220 | $ 225 |
| ***Percent Change from Base:*** | ***na*** | 2% | 9% | 9% | 12% |

**APPENDIX D**: **Paper and Packaging Disposed in 2011**

**FIGURE: Paper and packaging disposed in Vermont's waste stream, based on 2011 data. (State of Vermont Waste Composition Study, 2013)**