Composting Association of Vermont

Composting Associating of Vermont

Market Development Assessment

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Market Development Assessment

The Vermont Sustainable Jobs Fund (VSJF) was asked by Pat O'Neill, Program Director of the Composting Association of Vermont (CAV), to apply VSJF's market development model to the development of Vermont's compost market. VSJF's market development model is a road map for strategic planning, workplan development, and project evaluation. VSJF uses this model to allocate grant funding and technical assistance to a variety of market sectors, but other types of organizations can use it to explore possibilities for different market sectors using their specific toolkits. A meeting with VSJF staff, members of the CAV board, and knowledgeable participants took place in September 2009 and a first draft of market development needs for compost in Vermont was created. This report provides an overview of VSJF's market development model and summarizes the market development needs identified for compost at the September meeting.

VSJF's Market Development Model

VSJF's model is premised on developing the "architecture of a market"[1] that supports sustainably produced goods and services. That is, rather than an "invisible hand" guiding markets, VSJF believes that consumers, governments, businesses, nonprofits, farmers and others continuously make and shape markets. Vermont is a small player on the world's stage, and larger forces can undermine our ecology, economy, and communities. However, VSJF's 'theory of change' is that thoughtful, strategic action enables Vermont to shape its destiny in sustainable ways.

VSJF's market development model starts by asking:

► **What practices are undermining the sustainability of a particular market sector? How do these problems impact Vermont?** We develop a problem statement that accounts for the social, environmental, and economic consequences of a particular activity.

CAV supplied VSJF with a problem statement that indicated that a basic understanding of compost is lacking in Vermont and the state is a laggard compared to many states that are encouraging waste diversion to composting.

CAV Problem Statement:

> "In many states composting and the use of compost are now promoted as a way to recover valuable nutrients and recycle them – with measurable environmental,

1 Neil Fligstein. 2002. *The Architecture of Markets: An Economic Sociology of Twenty-First-Century Capitalist Societies*. Princeton University Press.

economic, and sustainability benefits. This change has largely occurred as a result of environmental concerns, farm economics, and a general shift in thinking – including widespread agreement to reduce the amount of material that goes to landfills. In addition, there is broad agreement that the only way to achieve/ exceed a 50% diversion rate is by significantly increasing the amount of organic materials that are diverted from landfills.

In some respects Vermont is 10 or more years behind leading states in developing incentives, regulations and infrastructure that encourage diversion to composting. This shortfall impedes the planning of alternatives to landfilling Vermont's organic residuals and; adversely impacts how communities can manage their organic residuals as a resource.

As composting emerges as a valued community service, it is critical that infrastructure is in place, technical assistance is available, and best practices are established and applied. Vermonters have a lot to learn before the State's communities and agriculture can fully benefit from composting and the use of compost. A rudimentary understanding of our carbon-based world, and a basic understanding of why and how composting 'works' must become as common to policymakers, community leaders, business owners, and advocates as the ins and outs of zoning and selectboard orders. Without this understanding, substantive change in how we manage compostable materials is unlikely anytime soon.

There is a significant role for – and interest from – Vermonters at the local grassroots to direct the reuse of their organic residuals to meet local needs. Through policy and education communities can consider a more whole "ecological reckoning" (G. Bowman, Rodale Institute) of the benefits – be it water quality and conservation; food security; carbon sequestration; redistributing nutrients; or generating kilowatts or BTUs."

To address these problems VSJF then asks:

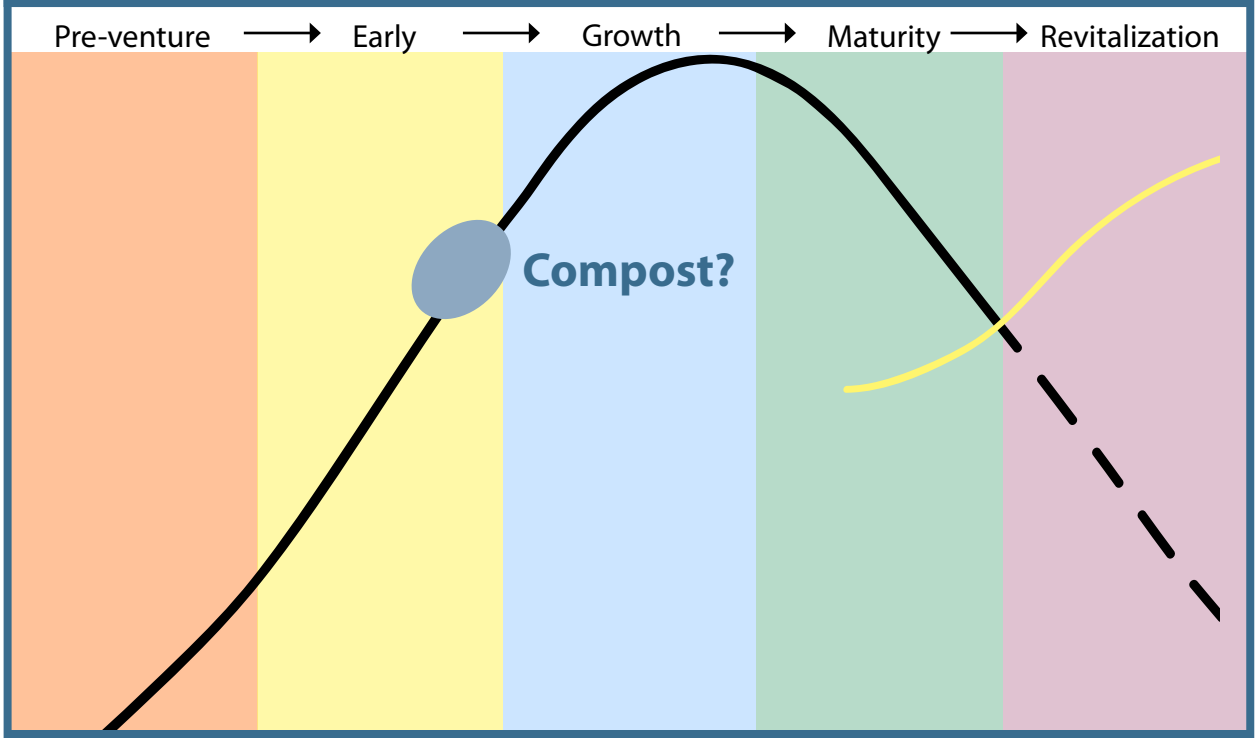
► **What are the emerging trends or opportunities for addressing these problems? Where is a particular market in its development trajectory?** The opportunities explored by VSJF need to help Vermont meet the needs of the present without compromising the ability of future generations to meet their own needs. The opportunity CAV is exploring–high quality compost–helps meet this criteria by, among other things:

- managing organic residuals as a resource within a hierarchy of use
- redistributing nutrients
- improving public health and safety
- improving and protecting soil health and water quality
- improving plant health and vigor
- maintaining beneficial levels of soil nutrients.[2]

2 Composting Association of Vermont. 2008. *Advancing Composting Through Stakeholder Involvement Site Permitting Review and Recommendations.*

But where is Vermont's compost market in its development trajectory? VSJF adopted the business assistance continuum (Figure 1) developed by the *Vermont Small Business Development Center* as a simple way to visualize the market development stage of an emerging trend or opportunity. Markets, just like businesses, require different types of technical assistance at different stages of development. For example, with VSJF's biomass-to-biofuels projects we were essentially starting from scratch, while our sustainable forestry work has attempted to revitalize an industry that has been around for generations. Biomass-to-biofuels grants and technical assistance have therefore been weighted toward research and equipment / infrastructure aimed at proof of concept, while sustainable forestry grants and technical assistance have emphasized sales / distribution / marketing and education / outreach.

Figure 1: Market Development Continuum



On this continuum, the *pre-venture* stage refers to a non-existent or nascent product or service. Opportunities are identified, but the supply chain is unclear and 'proof of concept' is not established.

The *early* stage is characterized by the emergence of early adopters or innovators, pilot or demonstration projects, market feasibility studies, and efforts to organize and promote the visibility of the market.

The *growth* phase reflects an expansion in the number of businesses and organizations selling products or providing services (e.g., an increase in the number of organic farmers). The supply chain is clearer, competition is evident as more entrepreneurs emerge, and efforts at optimization are made.

During the *mature* stage of market development, "incumbent firms" throughout the supply chain are established, and rules and norms governing activities are in effect.

Finally, the *revitalization* phase comes into play when external and/or internal unsustainable activities force mature market sectors and incumbent firms to a tipping point. A downward trend may ensue, or innovative "challenger firms" may introduce new ideas, products, and services to revive the sector.

Based on our meeting with CAV board members, CAV's previously completed SWOT analysis, and information contained in the *Legal Compost* report, it would appear that the market for compost in Vermont is somewhere between the early stage and growth stage: a number of businesses have emerged but the sector still struggles to promote its visibility and importance, the norms and rules governing activities are not quite in effect, and critical information about the size and scope of the market are still missing. For example, the Legal Compost report notes that "streamlined, goal and science-based regulatory process, committed leadership, and 'carbon literacy' education" are all missing.

Finally, given the current development stage of a particular market, VSJF begins to 'visualize the opportunity' by scanning the market's supply chain–from feedstock to end product–for a set of market development needs. We ask:

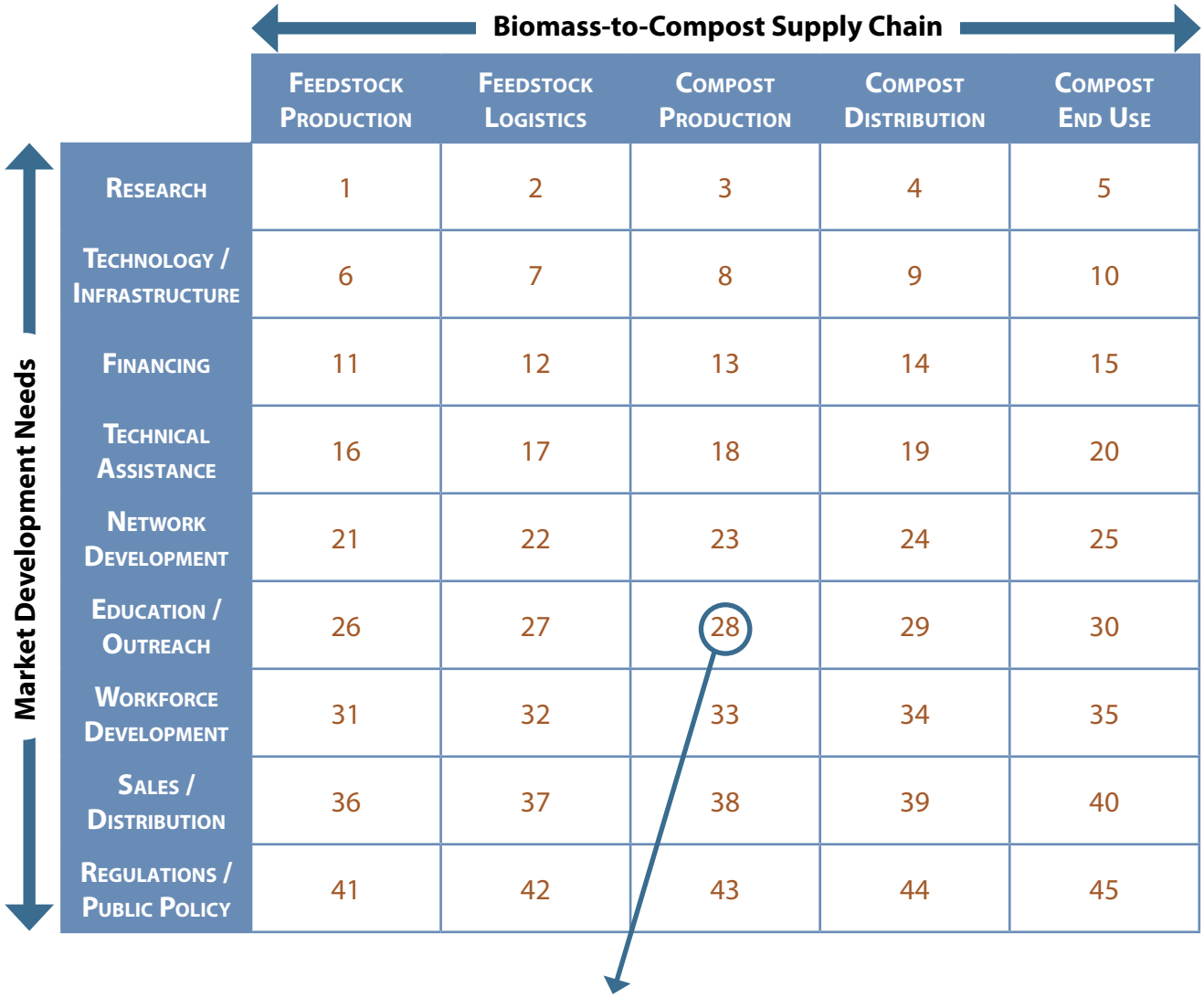
► What does the market's supply chain look like? What are some of the supply- and demand-side issues impacting a particular market sector? What market development needs are in place? What's missing?

We 'map out' what we think the supply chain of a market sector looks like and identify and analyze aspects of the supply chain–from feedstock production, feedstock logistics, production or conversion of that feedstock, to distribution of that product, and end uses of that product–against a set of market development needs. We have identified 9 essential market development needs or questions:

- What are the ***research*** needs?
- What are the ***technology*** and ***infrastructure*** needs?
- What are the ***financing*** needs?
- What are the ***technical assistance*** needs?
- What are the ***network development*** needs? Does a viable trade association (or business network) exist?
- What are the ***education*** and ***outreach*** needs?
- Are there additional ***workforce development*** needs that will further advance the sector?
- What are the ***sales***, ***distribution,*** and ***marketing*** needs?
- What ***regulatory*** and ***public policy*** issues need to be addressed in order to advance the sector?

When cross-tabulated, the 5 elements of the supply chain and 9 market development needs yield a 45-cell matrix (Figure 2).

Figure 2: Compost Market Development Matrix



For example, what are the education needs for compost production in Vermont? Who can provide proper training?

Each cell in the matrix poses a question (or multiple questions) and raises the possibility of strategic interventions, including new projects, partnerships, education campaigns, or new public policy. VSJF asked the participants at the September meeting to answer the following questions:

RESEARCH

1. What are the feedstock production research questions?
2. What are the feedstock logistics research questions?
3. What are the compost production research questions?
4. What are the compost distribution research questions?
5. What are the compost end user research questions?

TECHNOLOGY / INFRASTRUCTURE

6. What are the technology / infrastructure needs for feedstock production?
7. What are the technology / infrastructure needs for feedstock logistics?
8. What are the technology / infrastructure needs for compost production?
9. What are the technology / infrastructure needs for compost distribution?
10. What are the technology / infrastructure needs for compost end users?

FINANCING

11. What are the financing needs for feedstock production?
12. What are the financing needs for feedstock logistics?
13. What are the financing needs for compost production?
14. What are the financing needs for compost distribution?
15. What are the financing needs for compost end users?

TECHNICAL ASSISTANCE

16. What are the technical assistance needs for feedstock production?
17. What are the technical assistance needs for feedstock logistics?
18. What are the technical assistance needs for compost production?
19. What are the technical assistance needs for compost distribution?
20. What are the technical assistance needs for compost end users?

NETWORK DEVELOPMENT

21. What are the network development needs for feedstock production?
22. What are the network development needs for feedstock logistics?
23. What are the network development needs for compost production?
24. What are the network development needs for compost distribution?
25. What are the network development needs for compost end users?

EDUCATION and OUTREACH

26. What are the education and outreach needs for feedstock production?
27. What are the education and outreach needs for feedstock logistics?
28. What are the education and outreach needs for compost production?
29. What are the education and outreach needs for compost distribution?
30. What are the education and outreach needs for compost end users?

WORKFORCE DEVELOPMENT

31. What are the workforce development needs for feedstock production?
32. What are the workforce development needs for feedstock logistics?
33. What are the workforce development needs for compost production?
34. What are the workforce development needs for compost distribution?
35. What are the workforce development needs for compost end users?

SALES and DISTRIBUTION

36. What are the sales and distribution needs for feedstock production?
37. What are the sales and distribution needs for feedstock logistics?
38. What are the sales and distribution needs for compost production?
39. What are the sales and distribution needs for compost distribution?

40. What are the sales and distribution needs for compost end users?

REGULATORY / PUBLIC POLICY

41. What are the regulatory / public policy needs for feedstock production?
42. What are the regulatory / public policy needs for feedstock logistics?
43. What are the regulatory / public policy needs for compost production?
44. What are the regulatory / public policy needs for compost distribution?
45. What are the regulatory / public policy needs for compost end users?

CROSS-CUTTING ISSUES

What are the cross-cutting issues that apply across the compost supply chain?

Composting Association of Vermont Market Development Assessment

Table 1 provides the 'raw material' for the development of the compost market in Vermont identified at the September meeting. As a practical matter, CAV will not be able to tackle all of these issues at once. As a set of next steps, VSJF recommends:

- creating an over-arching strategic plan that prioritizes and fleshes out the most pressing market development needs. For example, if developing a sector-wide marketing plan is viewed as a high priority, CAV should develop a workplan with:
  - tasks,
  - roles & responsibilities,
  - timelines (could be multiple years), and
  - associated budgets for meeting that need.

As market development needs get met (e.g., as the cells in the matrix get filled in), CAV can begin to put in place:

- monitoring and evaluation systems to chart progress and gauge effectiveness.

Based on our experience, filling in the cells of the matrix represents an efficient and powerful use of limited time and resources to accelerate the development of a market sector.

Table 1: Compost Market Development Assessment

	Feedstock Production	Feedstock Logistics	Compost Production	Compost Distribution	Compost End Use
Research	•Identify variations in volume by region and seasonality beyond averages for post consumer residuals, manufacturing food residuals •Bulking agents (BA) - What types located where and when and in what volume •Options to lower cost of woody fiber BA – chips, shavings •Enterprise budget template to alter assumptions on inputs into compost production (recipe development) •Differentiation between feedstocks, eg. biosolids, manure, food scraps, woody plant materials •How can we enhance the existing biomass inventory to include all compost feedstocks – i.e. food 'waste' shed. Stone Environmental's work (funded by CVSWMD and ANR) – how can CAV make use of the inventory?	•Volumes of feedstocks to source from where? •Trucking options	•Mortality composting – clarify risks •See 1 & 2 •Recipe development to utilize 'unique' feedstocks or large quantities of specific feedstocks •Quality recipe development •100% diversion of food residuals	•What if scenarios: compost used on X% of highway projects compost as part of X% of storm water management plans for new development projects •What is the demand for various types of compost products?	•Perception of what compost is •Identify gaps in consumer knowledge re how to use, why to use •Use of cafeteria / restaurant food (post-consumer) for animal bedding use after composted (pathogen issues) Is there really a pathogen issue?
	Cross-cutting Issues: •How can data be collected? Currently classified as fertilizer producer for NAICS. •No idea right now, really, how much compost is produced or used in Vermont. Sector based data is key. Need a benchmark. Concern is about regulatory issues.				

Table 1: Compost Market Development Assessment (continued)

	Feedstock Production	Feedstock Logistics	Compost Production	Compost Distribution	Compost End Use
Technology / Infrastructure	•Forest management to produce chips/shavings for compost •Shared chippers/bark shredders •Equipment sharing between small municipalities and/or composters	•Web based locator for feedstocks – like VBMX – create an on-line marketplace for compost feedstocks •Pelletizing and other forms of compost to reduce transport cost (impacts end users) •Software and monitoring equipment for feedstock management and record keeping	•More support from Ag/ NRCS a priority •Co-location for compost heat recovery to greenhouse production/hot water		•Integration between biodigesters and food residuals for energy •Specialized compost spreaders •Compost turners; screeners
Financing	•Lower costs for woody materials BA		•NRCS priority -- informing lenders (to enable more funding for ag sites that use food residuals); relate to NMP – approved practice for cost share		•Cost comparisons for use on development/ road projects

Table 1: Compost Market Development Assessment (continued)

	Feedstock Production	Feedstock Logistics	Compost Production	Compost Distribution	Compost End Use
Technical Assistance	•Contaminant free – how to generate in most cost effective way	•Source separation 'how to' ongoing until 'embedded' in social behavior	•Develop an enterprise budget template to alter assumptions on inputs into compost production (i.e., recipe development) •Feedstock management, recipe development, leachate management under unusual conditions	•Marketing and biz plan templates	•Storage, health and safety, application uses/ rates •Product differentiation 'informed consumers' •High quality TA providers exist (e.g. Highfields Institute) •Need for more 'compost 101' workshops •There is compost 201 workshop already (for professionals and advocates) – water quality and climate change impacts; Worms in Schools program; AVR programs •Ties in with existing annual conferences and workshops – e.g. to enhance integration around compost benefits with water quality entities
	Cross-cutting Issues: •Clarify roles/services of SWDs, CAV, TA providers, local independent composters – and how to develop a common agenda and where information is stored / how shared				
Network Development	•Connect underutilized materials to composters	•See infrastructure # 7, VBMX type e-reference. Cost to set up/maintain			•Where to buy, content index – eg. Lamoille Cty Compost Directory: make it voluntary, electronic, update annually *and* expand
	Cross-cutting Issues: •Reach out to regional planning and regional development organizations				

Table 1: Compost Market Development Assessment (continued)

	Feedstock Production	Feedstock Logistics	Compost Production	Compost Distribution	Compost End Use
Education / Outreach	•Awareness of community / regional diversion programs •Municipalities – alternative uses for woody materials, leaf and yard debris •Individuals – benefits – cost/environmental of organics diversion, contaminants, compost locator, quality differences	•See #7 VBMX like system	•Develop an enterprise budget template to alter assumptions on inputs into compost production (i.e., recipe development). •Feedstock management, recipe development, leachate management under 'unusual' conditions	•Retailer education – product differentiation, selling points: 'green', connect to water quality, climate change, irrigation savings	•Consumer education - product differentiation, connect to water quality, climate change, irrigation cost savings, a choice that 'makes a difference' in the environment
	Cross-cutting Issues: • Resistance to change – our relationship as a society to a class of materials is changing/must change – there is no waste. We are moving towards and want sustainable materials management (i.e. recycling, producer responsibility, consumer choice and action based on environmental impact) • Yuck factor • Nuisance factors - lack of knowledge re feedstock management, offensive 'odor' is not inevitable • Education – How and Why re production and use of compost				

Table 1: Compost Market Development Assessment (continued)

	Feedstock Production	Feedstock Logistics	Compost Production	Compost Distribution	Compost End Use
Workforce Development	•Informed municipal road crews re where and how to use compost on town land, composting – like MA did •Informed town health officers (CAV working with VDH on this) •Informed solid waste treatment staff for biosolids composting •Institutional staff for source separation, contaminants •Workforce like: institutional users re source separation: students, patrons, clients •Landscape crews re: contaminants, diversion, composting		What is the demand for trained workforce? Who will train the next Tom or Brian?		
Sales / Distribution / Marketing	•Track changes in market value of feedstocks, contracting for feedstocks	•Trucking costs		•Develop marketing plan: who are customers, how product sold: bulk/bag, retail/wholesale, product differentiation, informed retailers, customer service policy for 'problems', disclaimers, proper handling of material	•Informed consumers – product differentiation •What are the next generation products?

Table 1: Compost Market Development Assessment (continued)

	Feedstock Production	Feedstock Logistics	Compost Production	Compost Distribution	Compost End Use
Regulatory / Public Policy	•Incentives for woody materials to composting •HBUO* policy - Balance for market demand for biomass for electricity, incinerating food residuals •Banning leaf and yard materials from landfill •Banning food residuals from landfill •Banning garbage disposals * HBUO – Highest and Best Use of Organics	•Encourage recycling of materials with least trucking	•Site permitting tied to real/ demonstrated risks (see other states) •Similar to other states as ANR did for tiered system •Encourage local/diverse/ small composting •Where need A250 jurisdiction •Address real environmental concerns, need for inspection – capacity to enforce rules •Site by site development permitting (A250) limited to address water quality	•Traffic – tradeoffs, less traffic to landfill, less traffic than liquid manure spreading	•Changes to storm water management rules (e.g., like state of Washington) •State to develop procurement policies for public property maintenance, road medians, etc.
	Cross-cutting Issues: •Get state to adopt positive stance to composting as a good and viable business / activity – signal that it's an important infrastructure need (this may help with lending)				