Lesson 10: Composting Economic Fundamentals

Learning Objectives:

- Understand basic business financial principles and terms
- Know major revenue sources and expenses of composting
- Realize the importance of unit costs for evaluating operations
- Be familiar with concept of a pro-forma
Business Finance Fundamentals

- Balance Sheet:
  - A snapshot of the financial health of an operation

- Income Statement (Profit & Loss):
  - Shows income, expenses and profit/loss

- Retained Earnings Statement (Equity):
  - Shows change in equity held in the business

- Cash Flow Statement:
  - Shows the impact of cash in and cash out on balance sheet
Balance Sheet

Snapshot at a given point in time of:
(e.g. end of fiscal year)

 Assets:
• Land
• Buildings
• Equipment
• Contracts
• Accounts Receivable
• Product

 Liabilities:
• Loans
• Accounts Payable
• Leases
• Buildings & Equipment Depreciation
Income Statement

- **Revenues:**
  - Tip Fees
  - Compost Sales
  - Grants
  - Equipment Sales

- **Expenses:**
  - Labor
  - Fuel
  - Equipment M&R
  - Lease Payments
  - Contract Services
  - Debt Service
  - Insurance
Full Cost Accounting

- Expands the Income Statement to include indirect costs and benefits:
  - Indirect Costs: administrative overhead, city services, etc.
  - Indirect Benefits: avoided landfill tip fees, avoided soil purchase, carbon credits, etc.

- Provides a more complete picture of costs and benefits of compost
Importance of Unit Costs

- Determine the unit cost ($ per ton) for each stage of the operation

Example – Grinding

Front End Loader:
- Annual Lease / Debt Service: $23,000
- Annual Fuel and O&M: $39,000

Grinder:
- Annual Lease / Debt Service: $32,000
- Annual Fuel and O&M: $109,000

Labor:
- Equipment Operator: $32,000

Total Annual Cost: $235,000

Annual Throughput (tons/year): 93,600

Average Cost/Ton: $2.51
## Unit Revenue(Cost) by Activity

**Facility Scenario:**
- Receives 24,000 CY of YT and 6,000 CY of VW annually
- Sells 15,000 CY/year of compost

<table>
<thead>
<tr>
<th>Activity</th>
<th>Annual Revenue (Cost)</th>
<th>Per CY of Feedstock</th>
<th>Per CY of Compost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tip Fee</td>
<td>$82,500</td>
<td>$2.75</td>
<td>$5.50</td>
</tr>
<tr>
<td>Receiving &amp; Grinding</td>
<td>($75,000)</td>
<td>($2.50)</td>
<td>($5.00)</td>
</tr>
<tr>
<td>Windrow Construction</td>
<td>($10,000)</td>
<td>($0.33)</td>
<td>($0.67)</td>
</tr>
<tr>
<td>Active Composting</td>
<td>($33,000)</td>
<td>($1.10)</td>
<td>($2.20)</td>
</tr>
<tr>
<td>Curing</td>
<td>($5,000)</td>
<td>($0.17)</td>
<td>($0.33)</td>
</tr>
<tr>
<td>Screening</td>
<td>($35,000)</td>
<td>($1.17)</td>
<td>($2.33)</td>
</tr>
<tr>
<td>Compost Sale Revenue</td>
<td>$90,000</td>
<td>$3.00</td>
<td>$6.00</td>
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<tr>
<td>Net Revenue (Cost)</td>
<td>$14,500</td>
<td>$0.48</td>
<td>$0.97</td>
</tr>
</tbody>
</table>
Composting Facility Pro-Forma

- Pro-Forma:
  - Estimates revenue and expenses based on anticipated feedstocks, capital costs, operating costs, and revenue
  - Projects future cash flow
  - Assesses business viability, e.g. profit, return on investment, and net present value
  - Allows one to conduct sensitivity ("what if") analyses based on differing assumptions, e.g. throughput, tip fees, compost sales, fuel cost, etc.
Components of Pro-Forma

- **Assumptions:**
  - Financial, materials flow, technology, equipment & labor inputs, capital & operating unit costs, growth factors

- **Capital Cost Estimate:**
  - Site development, structures, equipment, engineering, permitting & contingency

- **Annual Cost Estimate:**
  - Labor, O&M, cost of capital, taxes, etc.

- **Annual Revenue Estimate:**
  - Tip fees, compost sales, grants

- **Financial Analysis**
  - Projected cash flow, net income, net present value, rate of return, return on investment, etc.