



Using Total Business Cost Assessment to Link Sustainability to the Bottom Line

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What is Total Business Cost Assessment?

- **All costs and benefits associated with a decision, including uncertain costs and benefits**
- **Does not include Externalities or Type V costs typically included in Total Cost Assessment**



<i>Cost Type</i>	<i>Description</i>	<i>Examples</i>
I. Direct costs and benefits	Manufacturing site costs	Capital investment, operating, labor, materials, waste disposal costs, revenue
II. Indirect costs	Corporate and manufacturing overhead	Reporting costs, regulatory costs, and monitoring costs
III. Future and contingent liability costs	Potential fines, penalties and future liabilities	Clean-up, personal injury, and property damage lawsuits; industrial accident costs.
IV. Intangible internal costs (Company-paid)	Difficult-to-measure but real costs borne by the company	Cost to maintain customer loyalty, worker morale, union relations, and community relations, brand value
V. External costs (Not currently paid by the company)	Costs borne by society	Effect of operations on housing costs, degradation of habitat, effect of pollution on human health

Why Does Dow do TBCA?

- **Understand the significance of EH&S related decisions in the past, present and especially the future.**
- **Utilize multidisciplinary expertise to achieve a systematic, documented portrayal of alternatives.**
- **Integrate internal costs and externalities into a single assessment process**
- **Translate EH&S impact into value for improved decision making**

In so doing:

- **We are able to demonstrate the value impact of achieving key initiatives and goals**
- **Achieve a better understanding of the value impact of risks**
- **Identify gaps in plans to justify the expenditures and timing needed to address them**



Dow 2005 EHS Goals

Incident Reduction Goals	2005 Goal	Result
Personal safety & health (incidents/200,000 hours)	90% Reduction	84%
Loss of primary containment (number of events)	90% Reduction	72%
Process safety (number of events)	90% Reduction	71%
Motor vehicle accidents (incidents/million miles)	50% Reduction	39%
Transportation (incidents/10,000 shipments)	90% Reduction	65%
Incidents at customer facilities	50% Reduction	20%





Dow 2005 EHS Goals

Resource Productivity Goals	2005 Goal	% Achieved through 2004
Priority chemical emissions (tons)	75% Reduction	112%
Overall chemical emissions (tons)	50% Reduction	102%
Waste ratio (lbs waste/lb production)	50% Reduction	65%
Wastewater ratio (lbs wastewater/lb production)	50% Reduction	70%
Energy intensity (BTUs/lb production)	20% Reduction	105%



Dow Estimated Type 1 & 2 Costs (Resource Productivity)

Direct & Indirect Costs	\$MM total
Priority emissions	53
Chemical emissions	219
Waste emissions	104
Wastewater emissions	21
Energy	579
Total	976

Dow Estimated Type 3 Savings (Resource Productivity)

Hard & Soft Dollar Values (Benefits)	\$MM total
Priority emissions	-
Chemical emissions	206
Waste emissions	308
Wastewater emissions	90
Energy	4,949
Total	5,553

To the bottom line . . .

- **EH&S 2005 Incidents Goals**
 - **We estimate total value of \$950MM**
- **For our Resource Productivity Goals**
 - **\$1 billion in costs generated \$5 billion in estimated benefits.**

What comes next?

“Sustainability may begin at home, but its destiny is to engage the problems of the world.”

Andrew N. Liveris, President, CEO, and Chairman, Dow Chemical Company



Our 2015 Sustainability Goals

- **Local Protection of Human Health and the Environment (LPHHE)**
- **Contributing to Community Success**
- **Product Safety Commitment**
- **Sustainable Chemistry**
- **Products Designed to Solve World Challenges**
- **Energy Efficiency and Conservation**
- **Addressing Climate Change**

<http://www.dow.com/commitments/goals/>



Sustainability TBCA Considerations...

- Encourage focus upon Type IV costs (intangibles)**
- Challenge using full spectrum of the future (best and worst case, as well as most probable)**
- Recognize that realized Type III (contingent liabilities) costs become Type I and II**
- Increasing consideration of Type V (external) costs, with the recognition that they may also become Type I and II costs and impact Type III and Type IV.**

TBCA - 2015 Sustainability Goal Example...

LPPHE

“By 2015, Dow will achieve on average a 75 percent improvement of key indicators for EH&S operating excellence from 2005 baseline. We will also collaborate with our communities to set and commit to local sustainability”

- **One aspect of this goal is the establishment of a Healthy Workplace Index and the implementation of several programs.**

TBCA - 2015 Sustainability Goal Example...

- **Healthy Workplace TBCA performed to understand...**
 - **Benefit of the overall program**
 - **Understand value proposition for each location**
 - **Allocate resources to derive the greatest value**
 - **Better compete with an expanding list of priorities**

Other established tools in Dow that support Sustainability

- **WRAP (Waste Reduction Always Pays)**
 - Recognition program that recognizes innovative ways to save money while reducing wastes.
- **Six Sigma**
 - Used to develop new and old ideas into meaningful projects based on data within the context of a rigorous problem-solving methodology
- **By-Product Synergy**
 - Contributes to strategic sustainable development through “dematerialization” or “substitution”
- **Life Cycle Assessment / Eco-Fitness / Eco-Efficiency**
- **Waste Elimination Best Practice**
 - An ideation workshop with multi-functional representation



“[We will take] accountability not just for our own footprint on the planet, but the collective footprint we make because we are part of the human family.”

***Andrew N. Liveris, President, CEO, and Chairman,
Dow Chemical Company***

