Stepping into Sustainability

OSBA Conference

Presented by

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Today's Presentation

- Introductions
- Sustainability and Schools
- Sustainable Oregon Schools Initiative
- Q and A
- Getting started
- Board's role
- How to keep it going
- Closing / Q and A

Why?

- Human-caused conditions are resulting in human health impacts.
  (Air Pollution >> Asthma, some cancers…)

- Society using resources and impacting natural systems faster than they can be regenerated.
  (Fisheries, Water…)

- Accounting processes don't account for all costs.
  (Construction costs of school facilities don't reflect long-term operating cost)

- *Unequal distribution of wealth and limited resources leads to instabilities and warfare.*
  (Klamath Basin water…)

Chemicals found in Mother's Milk

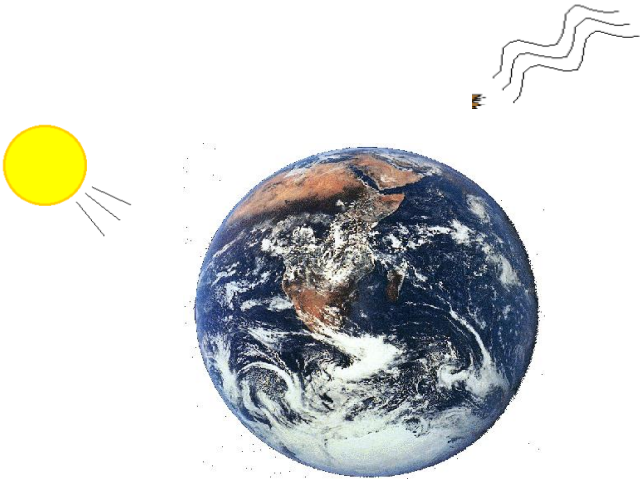
HALOGENATED COMPOUNDS
chlorodifluoromethane
chlorotrifluoromethane
dichlorofluoromethane
chloromethane
trichlorofluoromethane
dichloroethylene
Freon 113
methylene chloride
chloroform
1,1,1 – trichloroethane
carbon tetrachloride
trichloroethylene
chloropentane
chlorobenzene
iodopentane
3-methyl-1-iodobutance
chloroethylbenzene
dibromodichloromethane
dichlorobenzene
chlorodecane
trichlorobenzene
ALDEHYDES
acetaldehyde
methyl propanal
n-butantal
methylbutanal
crotoaldehyde
n-penanal
n-hexanal
furaldehyde
n-heptanal
benzaldehyde
n-octanal
phenyl acetaldehyde
n-undecanal
n-dodecanal
KETONES
acetone
methyl ethyl ketone
methyl propyl ketone
methyl vinyl ketone
ethyl vinyl ketone
2-pentanone
methyl pentanone
methyl hydrofuranone
2-methyl-3-hexanone
4-heptaonone
3-heptaonone
2- heptaonone
methyl heptaonone
furyl methyl ketone
octanone
acetaphenone
2-nonanone
2-decananone
alkylated lactone
phthalide
OXYGENATED ISOMERS
C4H6O
C4H8O
C5H10 O
C7H14 O2
C6H6O2
C6H14 O2
C6H16 O
C7H8O2
C7H10 O2
C9H18 O
C8H6O2
C10H12 O2
C10H14 O
C10H16 O
C10H18 O
C10H20 O
C10H22 O
C9H8O2
C11H20 O
ALCOHOLS
methanol
isoproponal
2-methyl-2-propanol
n-proponal
1-butanol
1-pentanol
x-furfuryl alcohol
2-ethyl-1-hexanol phenol
2,2,4-trimethylpenta-1,3-diol
decanonic acid
SULFUR COMPOUNDS
sulfur dioxide
carbon disulfide
dimethyl disulfide
carbonyl sulfide
NITROGEN COMPOUNDS
nitromethane
methyl acetamide
benzonitrile
methyl cinnoline
ESTERS
vinyl propionate
ethyl acetate
ethyl-n-caproate
isoamyl formate
ETHERS
dimethyl ether
dihydropyran
EPOXIDE

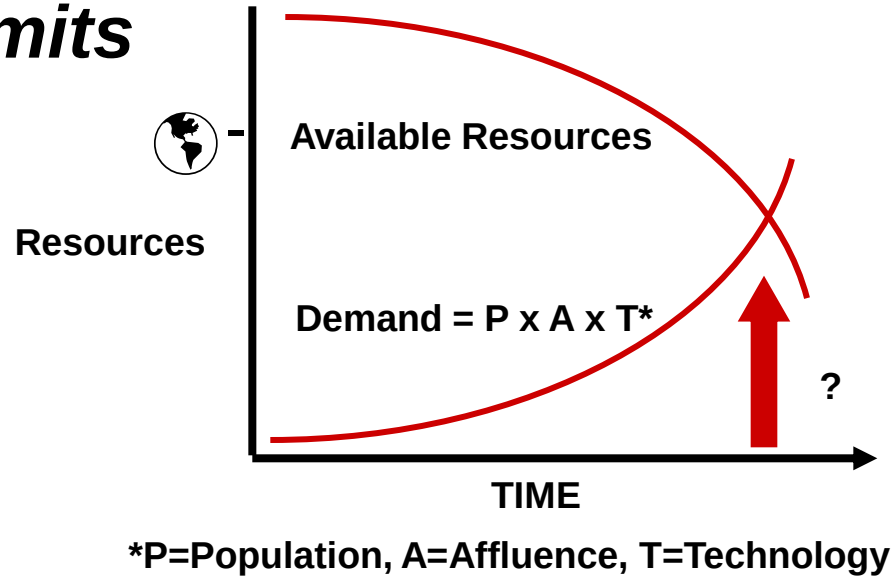
Can We Define Sustainability?

The Brundtland Commission Report, The United Nations, 1987

"Sustainable development … meets the needs of the present without compromising the ability of future generations to meet their own needs."

One Planet *With Limits*





- One Planet: closed system except for energy input
- 6.5 billion people, and increasing rapidly

Green vs. Sustainable

Green

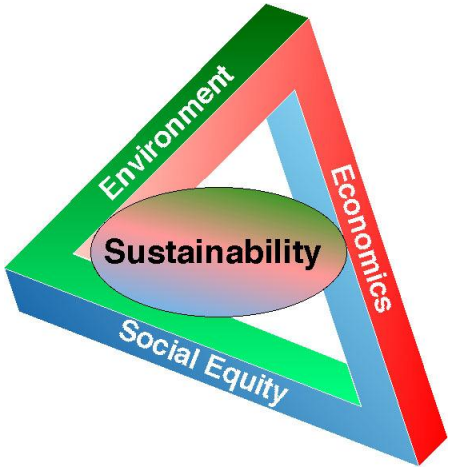
- Detail Focused *(recycling)*
- Ecological only
- Tactical *(increase recycling)*
- Subjective -Success not defined

Sustainable

- Whole Systems Focus *(resource management)*
- Triple Bottom Line -Social Equity, Environment, Economics
- Strategic *(result in no wasted money, resources, negative social impacts)*
- Objective -Success clearly defined (*Zero waste. All resources stay in the system.*

Sustainability Frameworks

- Shared language and mental model
- Basis for organizing thinking
- Help identify the key issues
- Help ensure a complete analysis
- Guide decisions
- Provide a standard (are we there yet?)
- Let’s look at the Natural Step Framework…

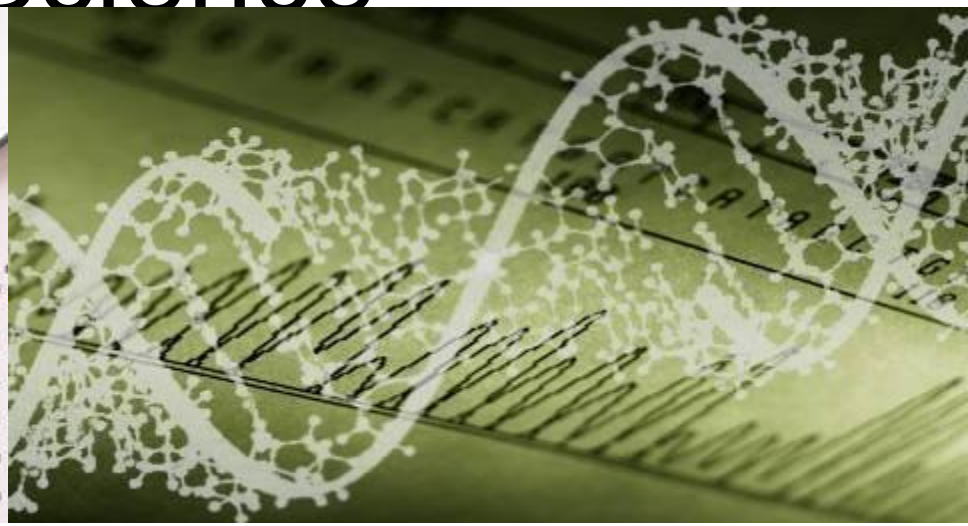


A Systems Perspective Emphasizes:



- Focusing "upstream"
- Principles rather than details
- Shared framework and a common language
- Unalterable system conditions

Basic Science



- Matter and energy do not disappear
- Matter and energy tend to disperse
- Value of matter is in its concentration and structure
- Photosynthesis is principal process by which net order is produced

Four System Conditions

In a sustainable society, nature is not subject to systematically increasing…

1. **… concentrations of substances extracted from the earth's crust;**

2. **… concentrations of substances produced by society;**

3. **… degradation by physical means;**

and in that society,

4. **people are not subject to conditions that systematically undermine their capacity to meet their needs .**

System Condition #2

HALOGENATED COMPOUNDS
chlorodifluoromethane
chlorotrifluoromethane
dichlorofluoromethane
chloromethane
trichlorofluoromethane
dichloroethylene
Freon 113
methylene chloride
chloroform
1,1,1 – trichloroethane
carbon tetrachloride
trichloroethylene
chloropentane
chlorobenzene

crotoaldehyde
n-penanal
n-hexanal
furaldehyde
n-heptanal
benzaldehyde
n-octanal
phenyl acetaldehyde
n-nonanal
methyl furaldehyde
n-decanal
n-undecanal
n-dodecanal
KETONES
acetone
methyl ethyl ketone

octanone
acetaphenone
2-nonanone
2-decananone
alkylated lactone
phthalide
OXYGENATED ISOMERS
C4H6O
C4H8O
C5H10 O
C4H6O2
C6H12 O
C7H10 O
C7H14 O2
C6H6O2
C6H14 O2

C11H20 O
ALCOHOLS
methanol
isoproponal
2-methyl-2-propanol
n-proponal
1-butanol
1-pentanol
x-furfuryl alcohol
2-ethyl-1-hexanol phenol
2,2,4-trimethylpenta-1,3-diol
x-terpineol
ACIDS
acetic acid
decanonic acid
SULFUR COMPOUNDS

In a sustainable society, nature is not subject to systematically increasing

… concentrations of substances produced by society.

Vision for Sustainable Schools

- All players understand importance of sustainability; Kids teach the adults.
- Sustainability is a lens used for every decision and activity; the school district is the sustainability model.
- Sustainability concepts and issues integrated comprehensively through all curriculum.
- Students understand how they can impact the dependent social, economic and environmental issues.
- Sufficient funding must be part of it!

Education: Promise and Paradox

The most educated nations leave the deepest ecological footprints.

Conclusion: Just educating citizens to higher levels is not sufficient.

Education needs to be reoriented.

Reorienting Education

- Select **knowledge** that supports sustainability goals, from all disciplines; Identify what's no longer relevant, to eliminate.
- Focus on major **issues** that threaten sustainability of the planet
- Provide practical **skills** that enable lifelong learning, and sustainable jobs and lives
- Understand multiple **perspectives**, including in time, context, place, impact
- Teach and model **values** needed to achieve sustainability goals
  - *Education for Sustainable Development Toolkit, by Rosalyn McKeown*

Education for Sustainable Development (ESD)

The United Nations General Assembly declared 2005–2014 as the ***"U.N. Decade of Education for Sustainable Development"***

Take note:

Education **about** sustainable development is an awareness lesson or theoretical discussion.

Education **for** sustainable development is the use of education as a tool to transform our societies to achieve sustainability.

More than an awareness lesson or a theoretical discussion is needed to move countries toward a more sustainable future.

ESD Involves All Disciplines

- Mathematics helps understand very small numbers (e.g., parts per million), needed to interpret pollution data.
- Language Arts, especially media literacy, creates consumers who can analyze corporate advertising messages and see beyond "green wash."
- History teaches the concept of global change, while helping students to recognize that change has occurred for centuries.
- Reading develops the ability to distinguish between fact and opinion, useful for example with political campaign literature.
- Social Studies helps students to understand ethnocentrism, racism, and gender inequity, and to recognize how these are expressed in the surrounding community and worldwide.

Plus, the School District itself is a Model

Facility and Operations:

Building, Landscaping/Grounds, Toxics/Indoor Environment

Systems and Services:

Food, Transportation, Procurement, Resource Management,

Community & Culture:

Community Involvement, Multi-Cultural Proficiency

Need to manage it all as an integrated system.

Economic Impact:

Manage Resource Use; (Energy, Water, Material)

- Rethinking resource use allows for reduced need. This saves money through avoided costs.
- Diverting waste via reuse or recycling reduces garbage costs.
- Managing energy and water bills saves money as billing mistakes are identified (PPS example)

Social Impact:

Manage Resource Use; (Energy, Water, Material)

- More money is available to meet social needs.
- Taxpayers have greater faith in school money management, and are more willing to provide financial support.
- Purchasing resources from local sources supports the local community.

Environmental Impact:
Manage Resource Use; (Energy, Water, Material)

- Reducing resource needs eliminates the environmental impacts related to resource extraction, manufacturing into commodities and products, transportation, etc.
- Reuse and recycling preserves virgin materials.

Schools have a Big Impact on Global Sustainability!

- Buy and use lots of things.
- Build and operate lots of buildings.
- Shelter and feed our children for half their waking hours.
- Produce tomorrow’s citizens.

Supports Academic Performance

- Curricular emphasis on acting locally while thinking globally.

  >> Reinforces the relevance for students.

- Reduced energy, water and material needs

  >> Saves $$$ for instruction.

- Better-designed and operated classrooms, and healthier foods.

  >> Improves attendance and concentration.

The Sustainability Journey

- All schools/districts are doing some things already
- Many people are interested, they just need to find each other and start the ball rolling.
- Just start; There's not one "right" way
- Sustainability is a powerful guiding concept, help others learn
- Select a framework to guide the effort
- Establish a Sustainable Vision
- Eventually, Sustainability becomes a culture change

Sustainability Is..

- A Journey
- Not something new and additional to do
- A systems approach to everything we already do
- The direction of Oregon Government, Business, and Higher Education

K-12 needs to embrace it!

Healthy Schools – Healthy Environments

About the Sustainable Oregon Schools Initiative

Steering Committee

SOSI Mission:

To help Oregon's K-12 schools integrate sustainability principles system-wide and prepare our children to create and succeed in a sustainable future..

Donors/ Supporters

$$

Zero Waste Alliance (ZWA)

Staff and Volunteers

Sustainable Oregon Schools Initiative
(SOSI)

Serving: All participants in Oregon's K-12 school system, public and private, and its stakeholders, via:

- Website
- Electronic Newsletter
- Multi-stakeholder Work-teams, creating new resources
- Presentations, training

SOSI Goals:

- *Share information and create relationships that best support sustainability in our schools.*
- *Develop and share resources that facilitate integrating sustainability into schools, school districts and their supporting organizations.*
- *Accelerate the pace of integrating sustainability into Oregon's schools and school districts.*
- *Develop SOSI into a program that assists Oregon's K-12 school system and students on their journey toward a sustainable future, for as long as needed.*

SOSI Steering Committee

- Central Oregon Environmental Center
- Coastwide Laboratories
- COSA
- DHS, Oregon Public Health Division
- David Douglas School District
- Environmental Education Assoc. of OR.
- Gladstone School District
- Metro / Oregon Green Schools Assoc.
- North Central ESD
- Office of the Governor
- Oregon Department of Energy
- Oregon Education Association
- Oregon School Boards Association
- Oregon School Employees Assoc.
- OSU 4H Wildlife Stewards
- Portland General Electric
- Portland Public Schools
- Portland State University, Graduate School of Education
- Riverdale School District
- Salem-Keizer School District
- Siltronic Corporation
- The Catlin Gabel School
- West Linn/Wilsonville School District
- Willamette ESD

www.sustainableschools.org

Q and A

Districts Are Moving Forward

- Schools have many exciting green initiatives.
- Now they're taking the next steps:
  - Adopt sustainability board policies
  - Form district sustainability advisory committees
  - Designate sustainability coordinators
  - And more!
- They are seeking support, collaboration and training.

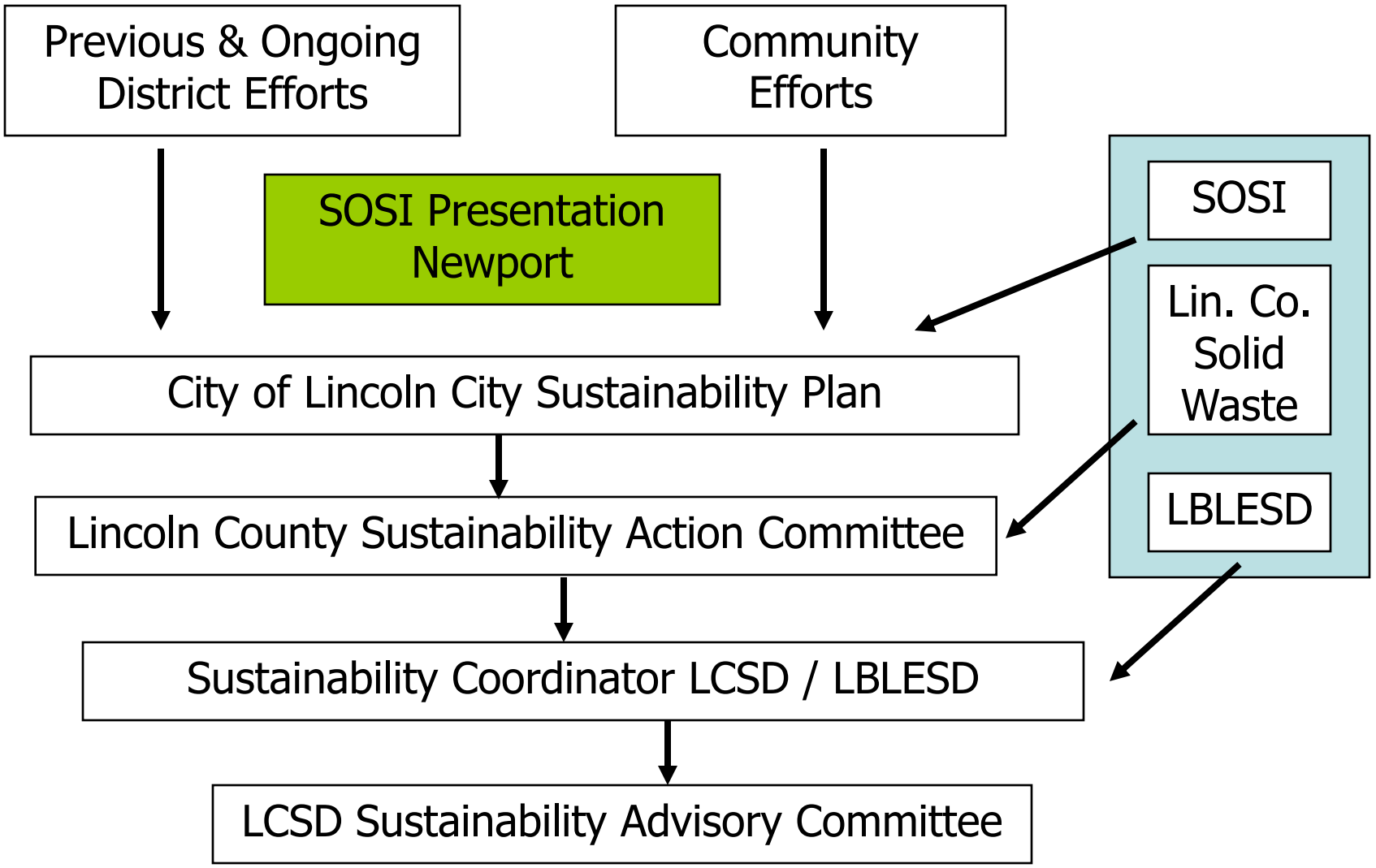
The Sustainability Effort should be managed in order to:

- Gain momentum by involving all stakeholders.
- Continually evaluate the WHOLE system.
- Set long-term goals and priorities.
- Have documented processes that create a permanent, integrated effort.
- Track progress across the organization.
- Eventually, achieve a sustainability a culture change.

- School District Stories from the Journey
- Sustainability Evolution

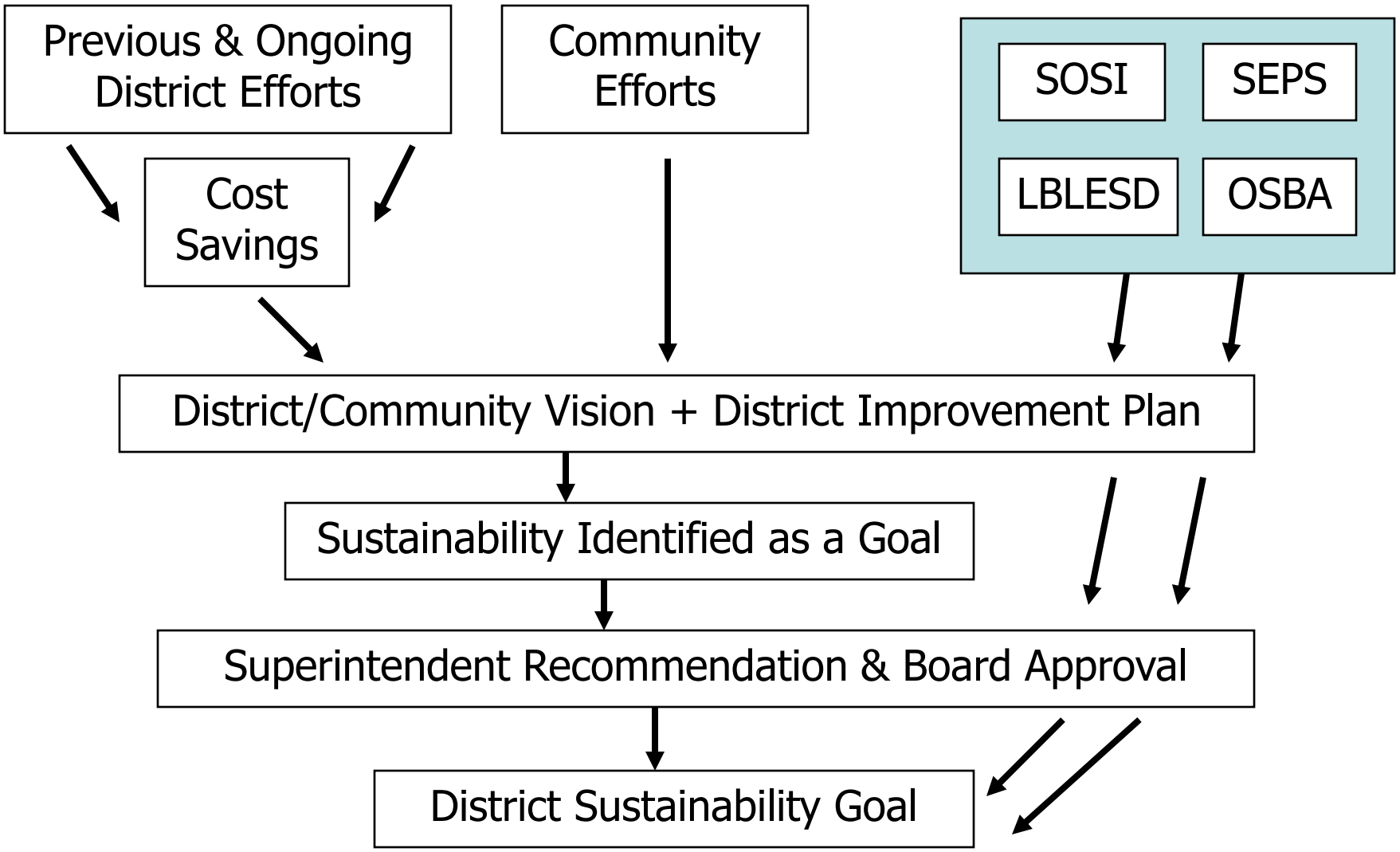
Lincoln County School District

Path to Sustainability



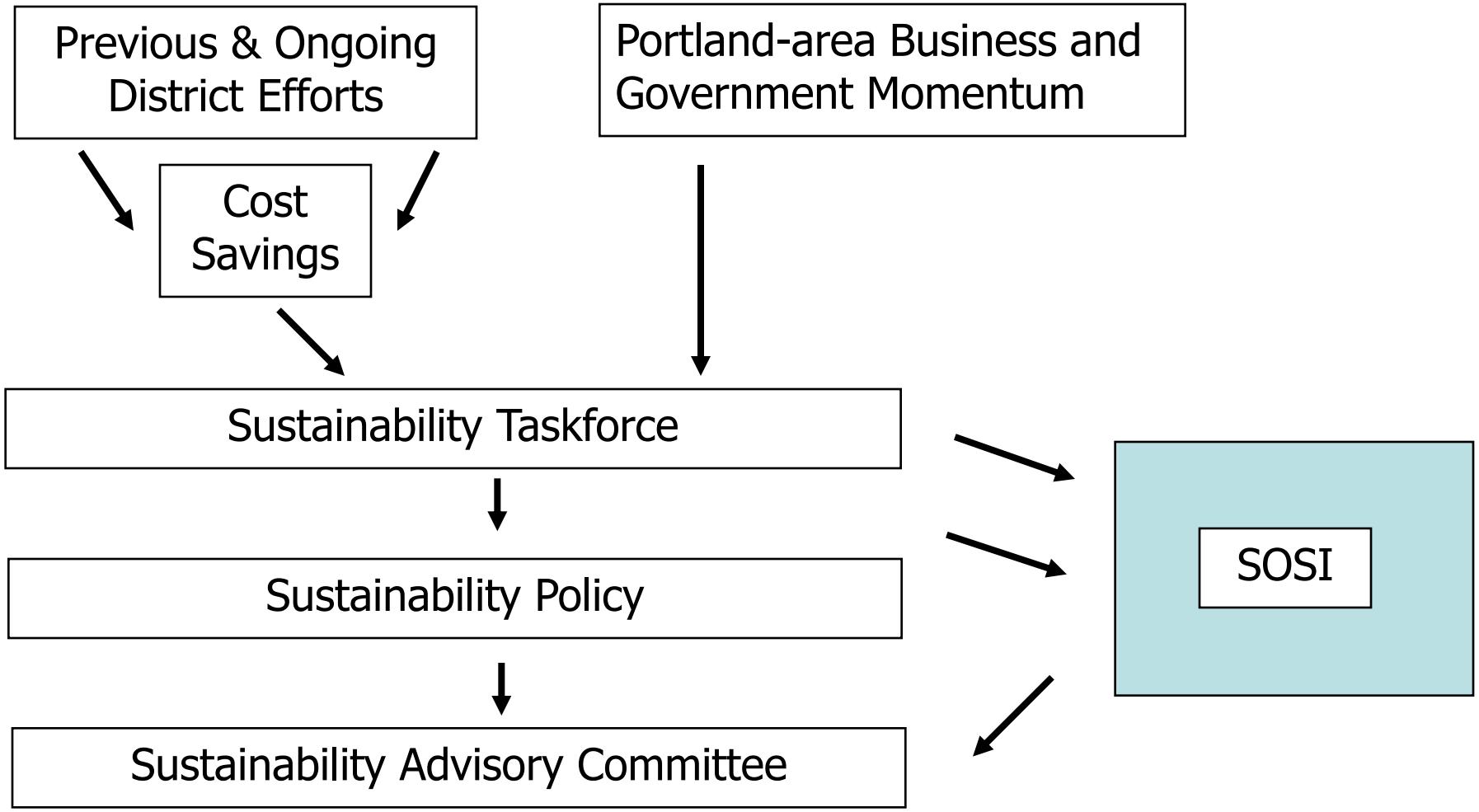
Corvallis School District

Confluence of Factors Leading to Sustainability



Beaverton School District

The Sustainability Journey



Role of the School Board

Sustainability Policy (Version 1)

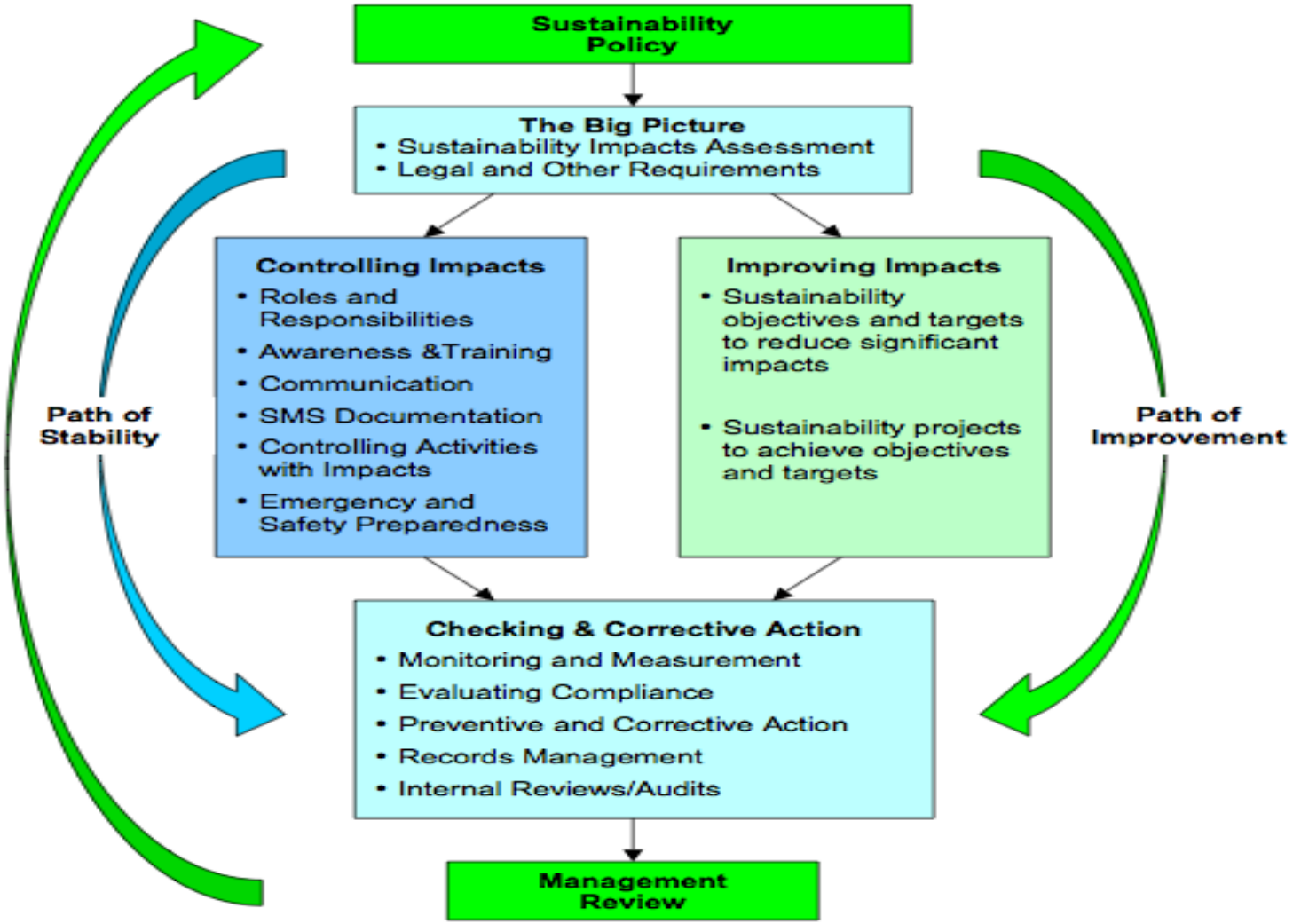
The district recognizes sustainability as an important principle that supports developing an ethic of sustainability in its practices. The district defines sustainability as "meeting the educational, environmental, social and economic needs of present generations without compromising the ability of future generations to meet their own needs." Sustainability is managed through efforts in balancing the interdependent areas of education, environment, society and economy to contribute to a healthy future for our students, staff and the district.

Sustainability may be demonstrated through:

- Leadership in sustainable management - striving to balance educational, economic, social and environmental issues in our daily decision-making;
- Leadership in student achievement - incorporating environmental, social and economic sustainability concepts in our education of students;
- Leadership in fostering student health and well-being - providing a physical environment that promotes the health, productivity and safety of students and staff;
- Continual Improvement - seeking new, expanded and improved ways to create a sustainable and restorative future.

To effectively achieve these commitments, the district may implement a Sustainability Management System (SMS)[1] that extends sustainability to district activities.

SUSTAINABILITY MANAGEMENT SYSTEM DIAGRAM



Sustainability Management System (SMS)

- *Sustainability Policy*
- *Understanding Big Picture and Setting Goals for the SMS*
  - Environmental, economic and social impacts
  - Baseline assessment
  - Relevant rules, regulations and other requirements
  - Objectives, targets and projects
- *Establishing and Using the SMS*
  - Roles, responsibilities, and authority
  - Awareness and training
  - Communication (internal and community)
  - SMS documentation
  - Controlling activities that have real or potential sustainability impacts
  - Emergency and safety preparedness and response
- *Checking and Correcting the SMS*
  - Monitoring and measurement
  - Evaluation of compliance to relevant rules, regulations and other requirements
  - SMS nonconformity, corrective action and preventive action
  - Records management
  - SMS internal review
- *Annual District Management Review of SMS*

In Summary-

- Need to reorient the education system to support a sustainable future.
- K-12 school system is a critical piece.
- School districts are beginning the journey.
- School boards and administrators need to engage.
- Tell your ESD that you're interested/need resources.
- Use sustainability as a guiding principal for decisions.
- Adopt a sustainability goal

Q and A

Thank You!