

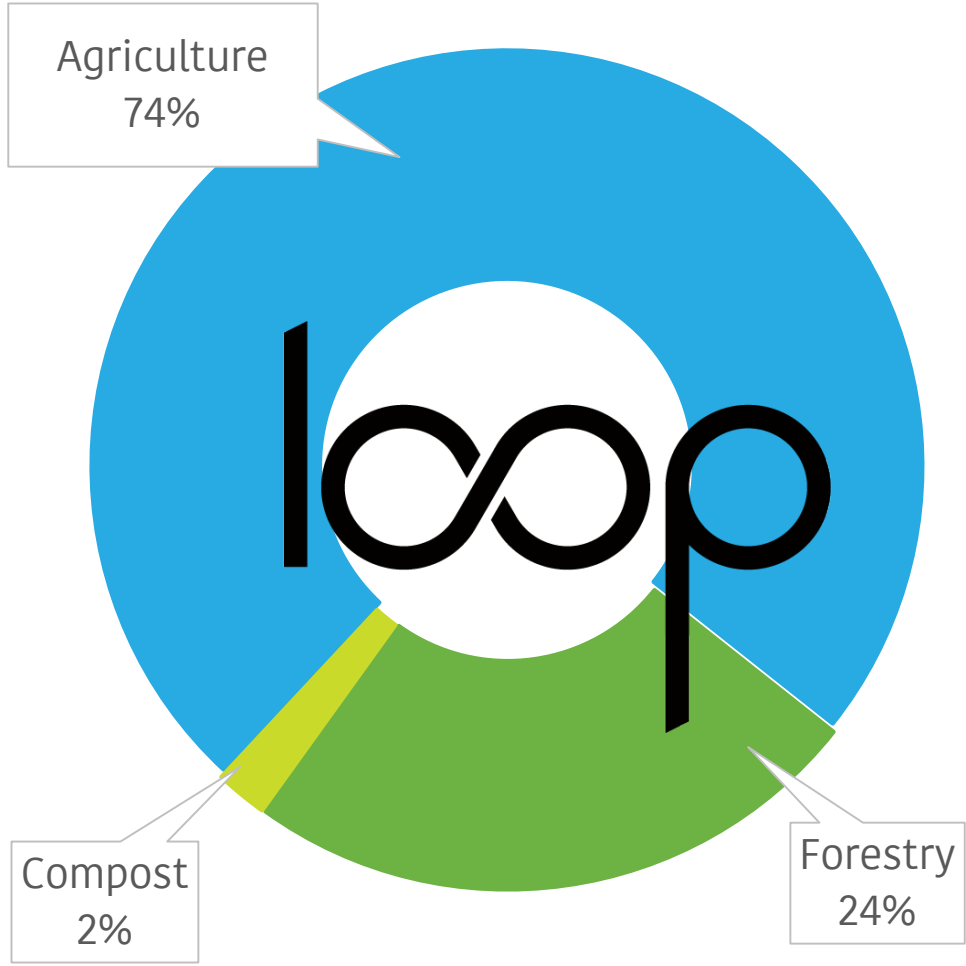


Alternative Options for the Use of Biosolids

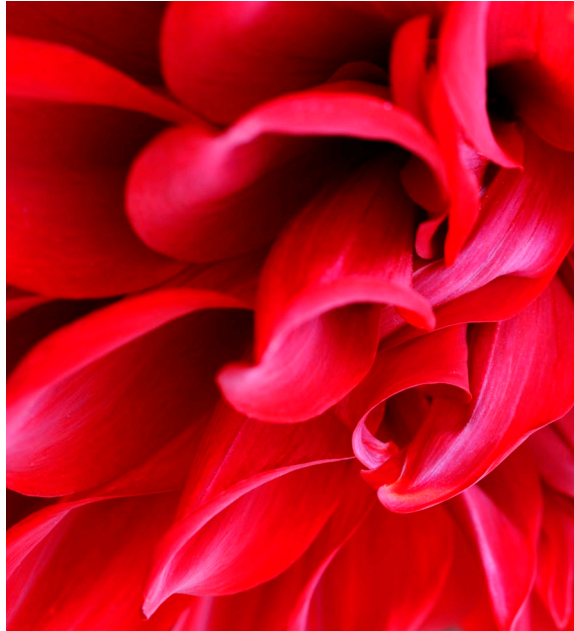
Summary of King County
Council proviso and
WTD response

Erika Kinno
Research & Policy Project Manager





130,000 wet tons / year biosolids

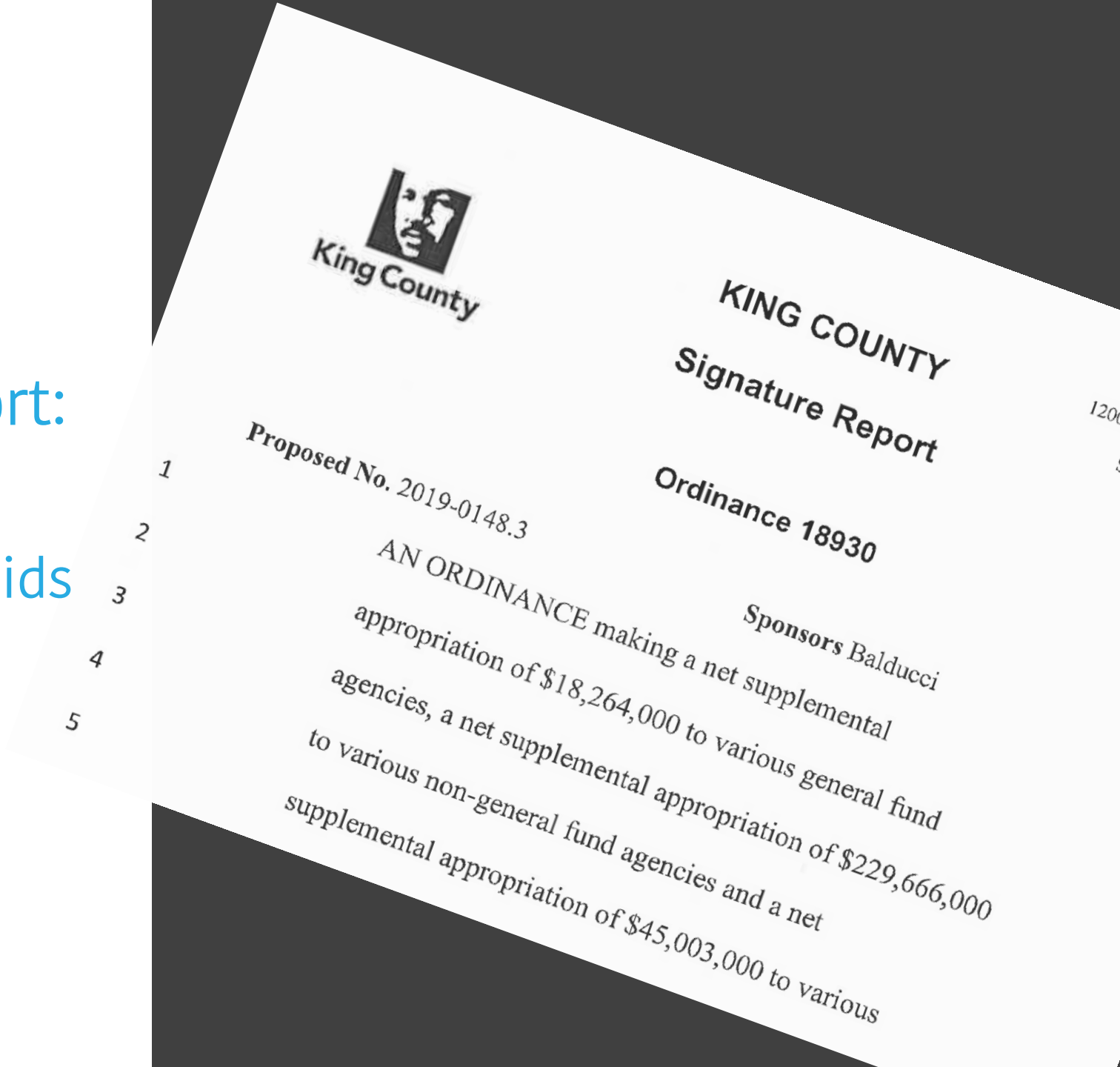


June 2019

- Council requests report:

- Alternatives for biosolids other than Class B

- Expansion or diversification of markets for biosolids





**Costs and benefits
of alternatives to
current program**



**Include local Class A
biosolids facility
as one alternative**



**Financial analysis
of transition
to Class A**

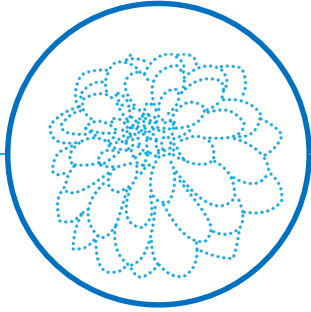
What we reviewed

- Technical study by consultant
- Past Class A studies
- Current program costs and strategy



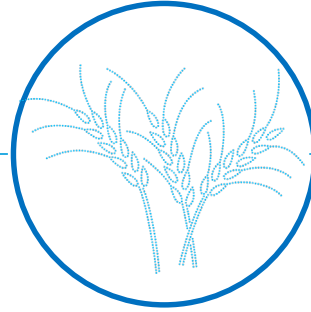
Three scenarios

projected out to year 2050



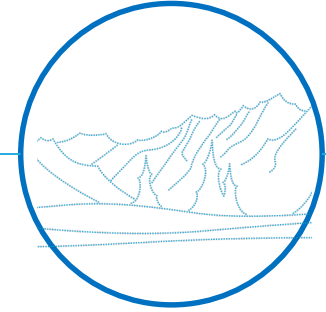
Base Case scenario

Continuation of current
Class B land application



Pyrolysis scenario

Public-private
partnership to operate
an offsite drying and
pyrolysis facility

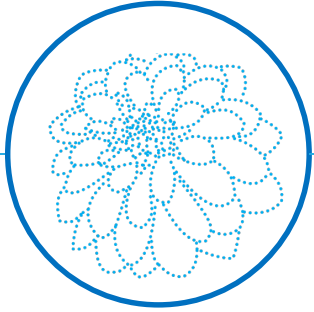


100% Class A scenario

Package of options to
produce Class A products
for different uses:

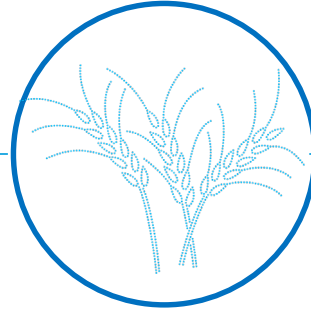
- 1) upgrades at treatment plants
- 2) construct an offsite composting facility

What did we learn?



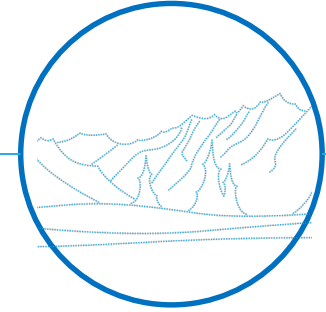
All three scenarios are costly
and face significant technical and physical challenges.

Even with Base Case Class B, digester upgrades will be needed.



Pyrolysis scenario scored lowest due to

- Costs
- Environmental impacts
- Technical risk
- Regulatory risk

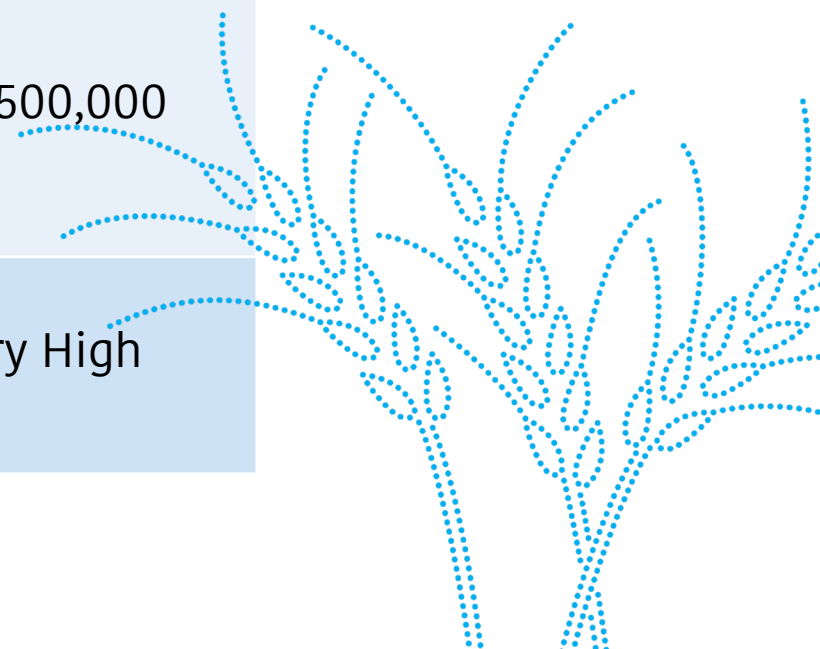


100% Class A scenario offers opportunities to integrate a phased transition when upgrades are needed.

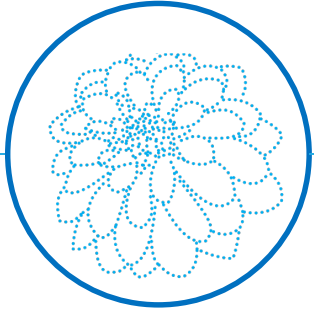
Not a one size fits all scenario for all treatment plants.

COMPARISON – TOTAL COSTS & SCORES

	Base case Class B	Pyrolysis	100% Class A
Escalated capital costs	\$335,000,000	\$1,115,000,000	\$590,000,000
2050 annual net operating and maintenance costs minus revenue	\$29,400,000	\$28,500,000	\$29,500,000
Triple Bottom Line score	High	Medium	Very High

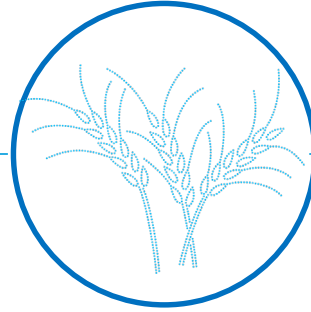


What did we learn?



All three scenarios are costly
and face significant technical and physical challenges.

Even with Base Case Class B, digester upgrades will be needed.



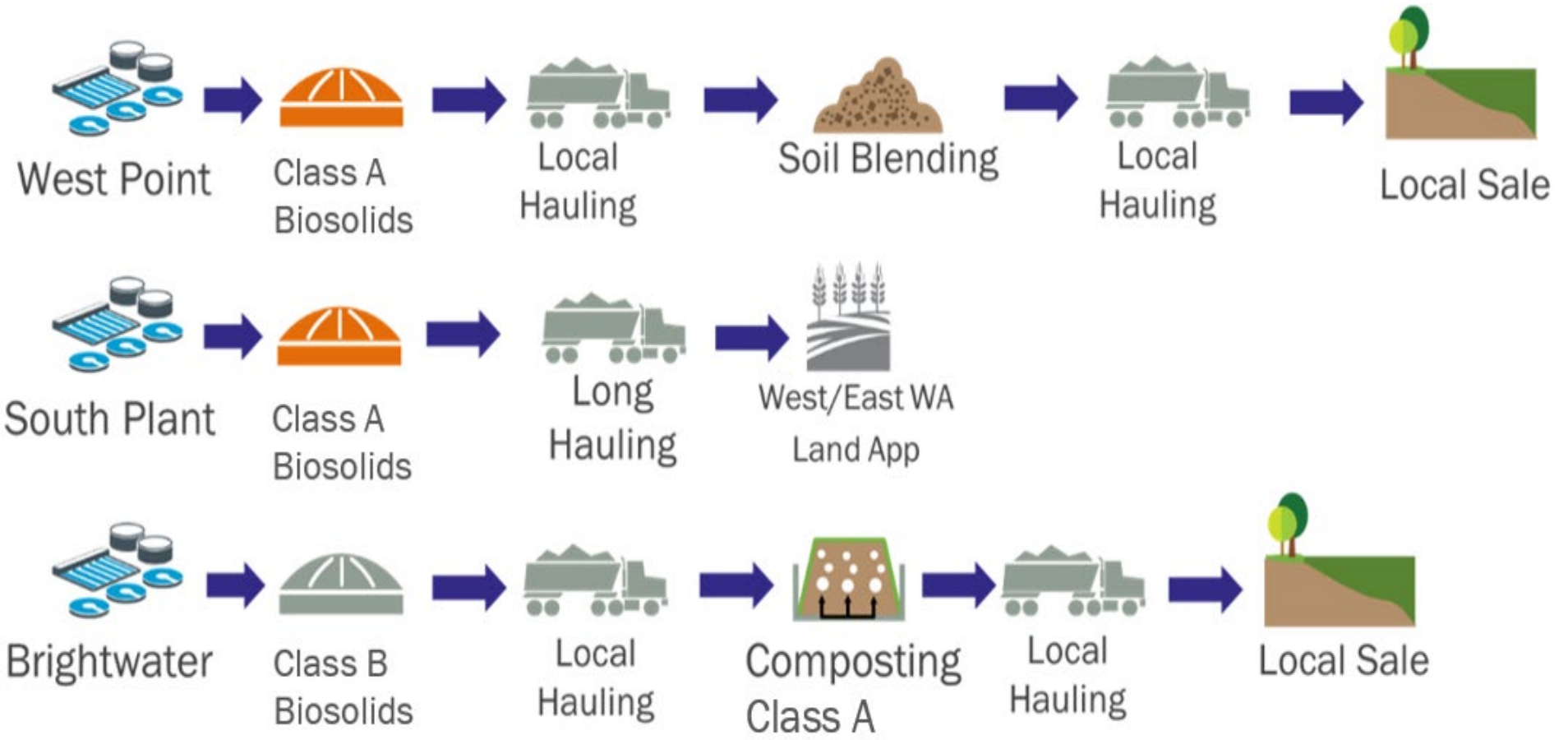
Pyrolysis scenario scored lowest due to

- Costs
- Environmental impacts
- Technical risk
- Regulatory risk



100% Class A scenario offers opportunities to integrate a phased transition when upgrades are needed.

Not a one size fits all scenario for all treatment plants.



100% Class A Scenario Example

Table 2. Summary of Escalated Capital Cost (in \$ millions)		
Scenarios	Facility	Total Project Capital Cost (Escalated to midpoint 2028)
Baseline: Class B	West Point	\$180
	South Plant	\$105
	Brightwater	\$50
	Total	\$335
Scenario Two: 100 Percent Class A	West Point	\$165
	Soil Blending	\$75
	South Plant	\$150
	Brightwater	\$50
	Composting	\$150
	Total	\$590
Scenario Three: Pyrolysis	West Point	\$180
	South Plant	\$105
	Brightwater	\$50
	Pyrolysis	\$780
	Total	\$1,115

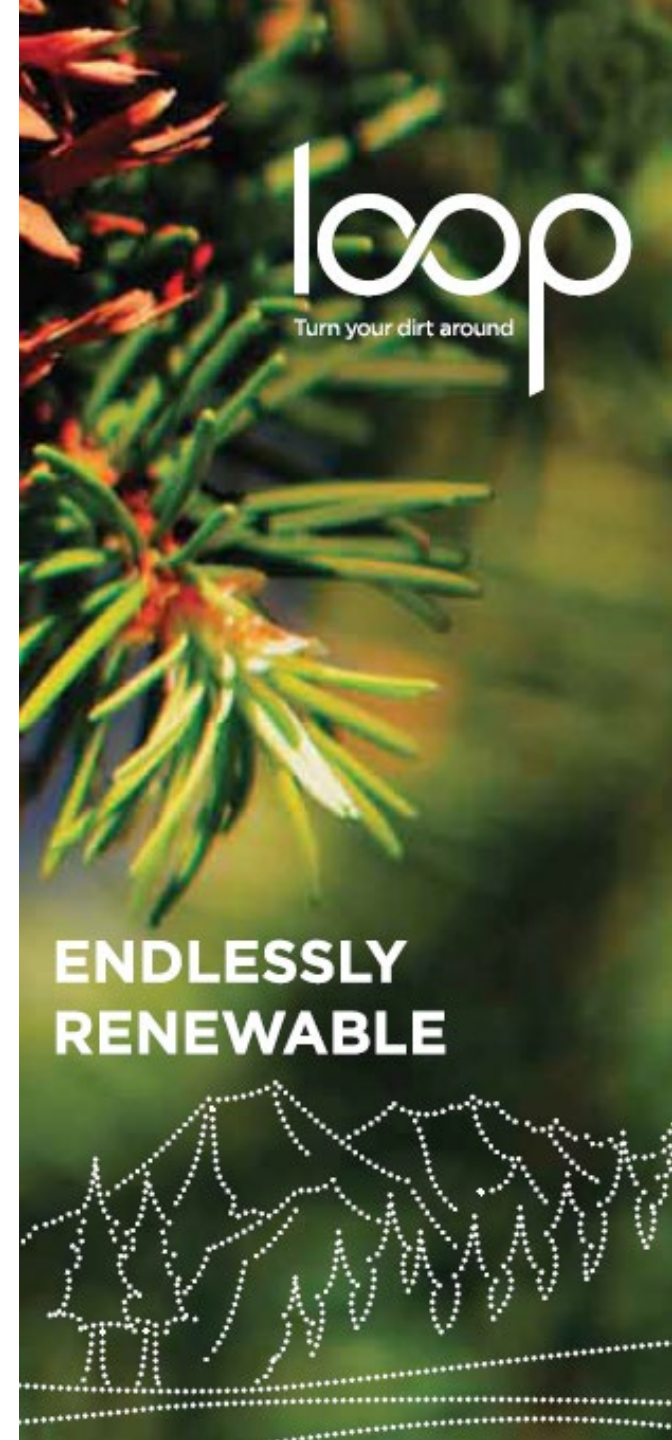
Table 2: Summary of Escalated Capital Cost

Table 3. Summary of 2050 Annual Operations and Maintenance and Revenues (in \$ millions)				
Scenarios	Facility	O&M	Revenues	Total
Baseline: Class B	West Point	\$14.50	(\$2.00)	\$12.50
	South Plant	\$19.00	(\$9.00)	\$12.50
	Brightwater	\$7.00	(\$0.10)	\$12.50
	Total	\$40.50	(\$11.10)	\$29.40
Scenario Two: 100 Percent Class A	West Point	\$10.50	(\$2.00)	\$8.50
	Soil Blending	\$8.00	(\$4.00)	\$4.00
	South Plant	\$19.00	(\$9.50)	\$9.50
	Brightwater	\$4.50	\$0.00	\$4.50
	Composting	\$7.00	(\$4.00)	\$3.00
	Total	\$49.00	(\$19.50)	\$29.50
Scenario Three: Pyrolysis	West Point	\$10.00	(\$1.50)	\$8.50
	South Plant	\$13.00	(\$8.50)	\$4.50
	Brightwater	\$4.50	\$0.00	\$4.50
	Pyrolysis	\$11.50	(\$0.50)	\$11.00
	Total	\$39.00	(\$10.50)	\$28.50

Table 3. Summary of 2050 Annual Operations and Maintenance and Revenues

Overall conclusions

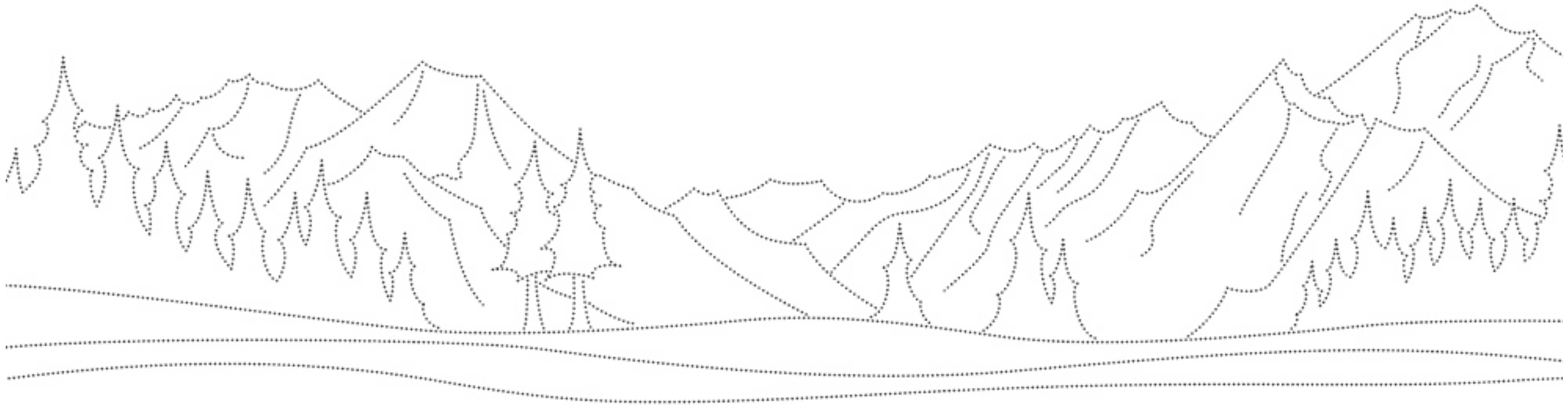
- 01 All future options are costly with technical and physical challenges
- 02 Digester capacity expansion in next 30 years – synergies
- 03 Gradual transition to 100% Class A - various technologies and strategies
- 04 King County Code change needed to allow Class A



Questions?

Erika Kinno

erika.kinno@kingcounty.gov



King County | Resource Recovery