

Alaska Bulk Fuel Aggregation Study

Appendix E: Financial Analysis of Aggregation Scenario Results by Facility Size

This appendix evaluates the bulk fuel aggregation scenarios by facility size.

Small Facility Results

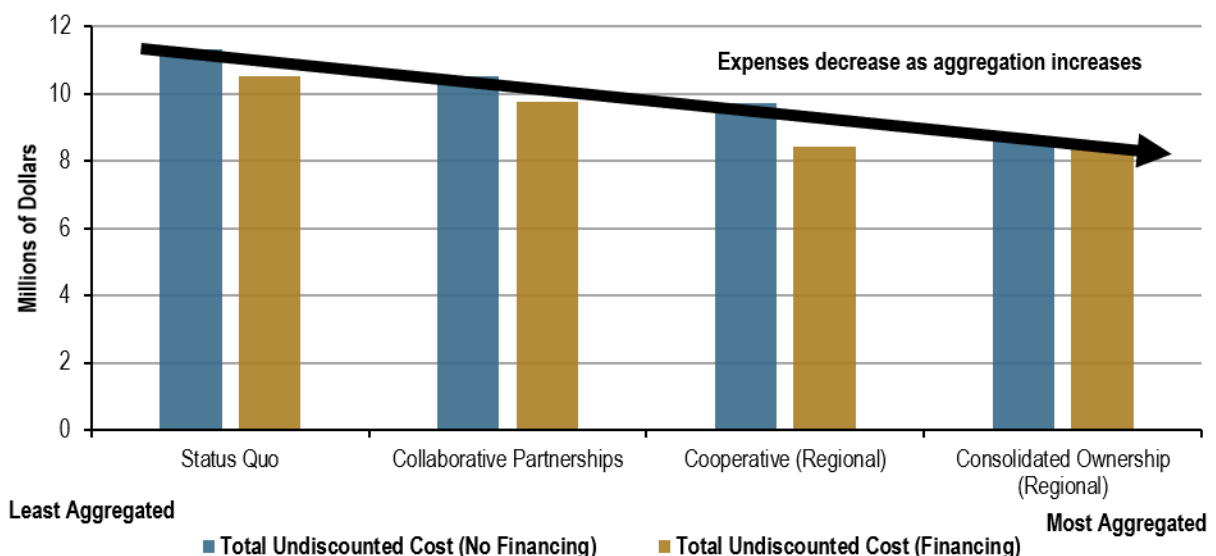
Small facilities were defined as facilities with annual throughput under 25,000 gallons of fuel. Examples of facilities likely in this size category include the publicly operated bulk fuel facilities in Hughes and Huslia. The following example demonstrates the impacts of aggregation on financial performance of a 20,000-gallon throughput facility.

Total Expenses

Figure 2 shows total expenses for each aggregation scenario over the model's 50-year period, both with and without financing for facility replacement.

- Status quo is the most expensive scenario, and consolidated regional ownership is the least expensive scenario.
- Consolidated regional ownership saves an estimated 8% on general annual operating expenses, and 24% in total expenses compared with status quo in year 50. This equals about \$133k per year in general operating expenses, not accounting for facility replacement.

Figure 1. Small Sized Facility Total Undiscounted Expense Over 50 Years



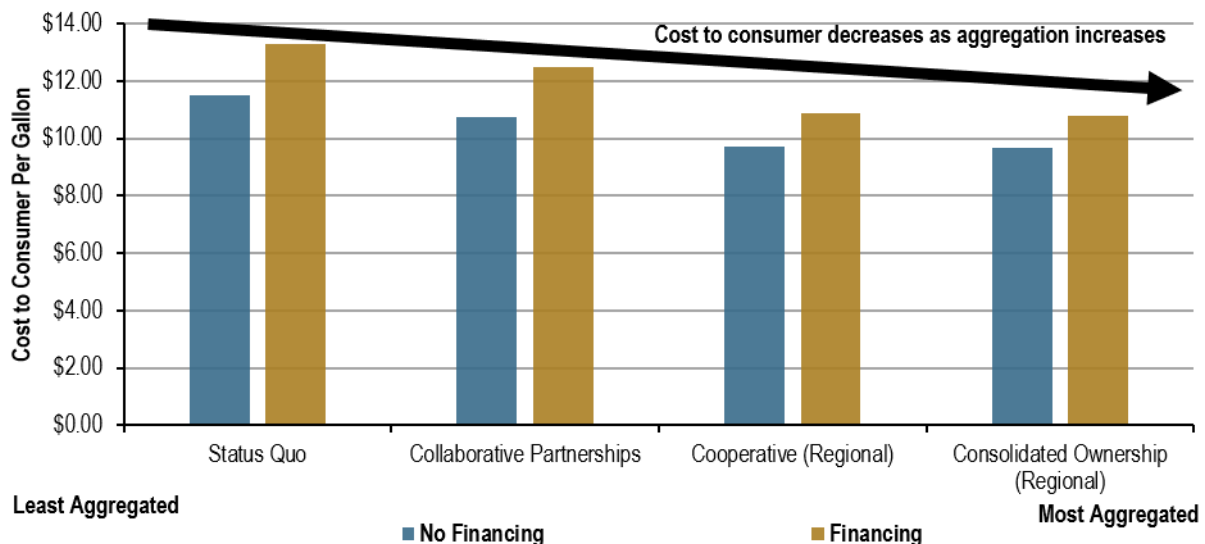
Source: Northern Economics analysis

Cost to Consumers

Figure 3 shows the amount a tank farm operator would need to charge a consumer per gallon in each aggregation scenario, with and without financing new facility builds.

- Financing results in higher costs that must be passed on to consumers compared to no financing.
- Increasing the degree of aggregation generally results in additional cost savings for consumers relative to the status quo. The values in this figure represent the minimum amount facilities can charge customers per gallon of fuel to achieve financial sustainability factoring in facility replacement.
- Consolidated ownership would make it possible to reduce retail fuel price from \$11.51 per gallon to \$9.65 per gallon (no financing) or from \$13.31 to \$10.77 (with financing).

Figure 2. Small Facility Cost to Consumer per Gallon



Note: The key assumption in these scenarios is that the operator must be able to independently fund facility upkeep and replacement at the end of the facility's useful life. That means no grant funds or special financing terms better than market rate.

Source: Northern Economics analysis

Facility Replacement Fund

- In the status quo and collaborative partnership scenarios, a 20,000-gallon facility must set aside about \$86k annually in the facility replacement fund to fully fund a new facility after 25 years **with no financing**. In the cooperative and consolidated ownership scenarios, about \$61k would need to be set aside annually to fully fund a new facility **with no financing**.
- **With financing** in the status quo and collaborative partnership scenarios, the facility would need to set aside a little over \$121k per year in the replacement fund. In the cooperative and consolidated ownership scenarios, the facility would need to set aside about \$83k per year.

Savings with Aggregation

Table 4 shows the percentage savings relative to the status quo scenario (per gallon) for a 20,000-gallon facility.

- Aggregation of fuel purchasing would save an estimated 13% on the cost of fuel compared with independent operations (status quo).
- Other operating expenses are slightly higher compared with status quo in cooperative and consolidated ownership models due to additional administrative costs.
- Collaborative partnerships offer 2% savings in other operating costs relative to status quo.
- Cooperative and consolidated ownership scenarios save substantially on the amount needed to cover replacement relative to status quo primarily due to a longer expected facility life in these scenarios.

Table 1. Percent Savings Relative to Status Quo (per gallon), Small Sized Facility

	Cost of Fuel	Other Operating Expenses	Amount Needed to Cover Replacement
No Financing			
Status Quo	0%	0%	0%
Collaborative Partnerships	13%	2%	1%
Cooperative	13%	-12%	17%
Consolidated Ownership	13%	-9%	17%
Financing			
Status Quo	0%	0%	0%
Collaborative Partnerships	13%	2%	1%
Cooperative	13%	-12%	21%
Consolidated Ownership	13%	-9%	22%

Source: Northern Economics Analysis

Medium Facility Results

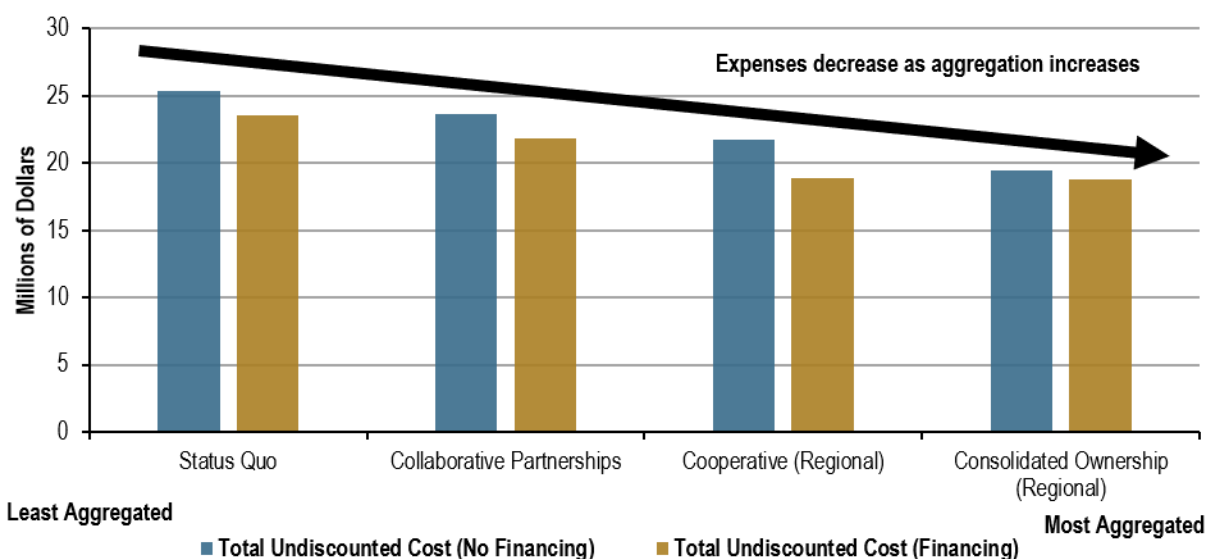
Medium facilities were defined as facilities with annual throughput 25,000 and 50,000 gallons of fuel. Examples of facilities at the high end of this size range in recent years include two publicly owned and operated facilities, the Allakaket Diesel Tank Farm and the Kalskag Consolidated Tank Farm, which serves both Lower and Upper Kalskag. The following example demonstrates the impacts of aggregation on financial performance of a 45,000-gallon throughput facility.

Total Expenses

Figure 4 shows total expenses for each aggregation scenario over the model's 50-year period, both with and without financing for facility replacement.

- Status quo is the most expensive scenario, and consolidated regional ownership is the least expensive scenario.
- Consolidated regional ownership saves an estimated 19% on general annual operating expenses, and 23% in total expenses compared with status quo over 50 years. This equals about \$263k per year in general operating expenses, not accounting for facility replacement.

Figure 3. Medium Sized Facility Total Undiscounted Cost Over 50 Years



Source: Northern Economics analysis

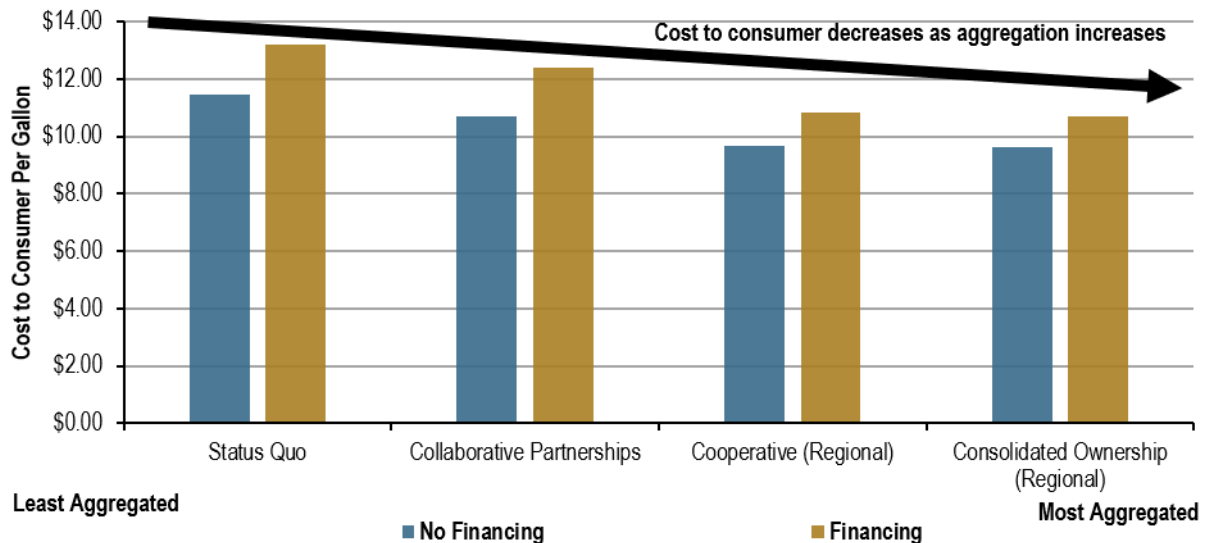
Cost to Consumers

Figure 5 shows the amount a tank farm operator would need to charge a consumer per gallon in each aggregation scenario, with and without financing new facility builds.

- As can be seen in the figure, financing generally results in higher costs that must be passed on to consumers than no financing.

- Increasing the degree of aggregation generally results in additional cost savings for consumers relative to the status quo. The values in this figure represent the minimum amount facilities can charge customers per gallon of fuel to achieve financial sustainability factoring in facility replacement.
- Consolidated ownership would make it possible to reduce retail fuel price from \$11.46 per gallon to \$9.62 per gallon (no financing) or from \$13.21 to \$10.71 per gallon (financing).

Figure 4. Medium Facility Cost to Consumer per Gallon



Note: The key assumption in these scenarios is that the operator must be able to independently fund facility upkeep and replacement at the end of the facility's useful life. That means no grant funds or special financing terms better than market rate.

Source: Northern Economics analysis

Facility Replacement Fund

- In the status quo and collaborative partnership scenarios, a 45,000-gallon facility must set aside about \$193k annually in the facility replacement fund to fully fund a new facility after 25 years **with no financing**. In the cooperative and consolidated ownership scenarios, about \$136k would need to be set aside annually to fully fund a new facility after 35 years **with no financing**.
- With financing** in the status quo and collaborative partnership scenarios, the facility would need to set aside a little over \$270k per year in the replacement fund. In the cooperative and consolidated ownership scenarios, the facility would need to set aside about \$186k per year.

Savings with Aggregation

Table 5 shows the percentage savings relative to the status quo scenario (per gallon) for a 45,000-gallon facility.

- Aggregation of fuel purchasing would save an estimated 13% on the cost of fuel compared with independent operations (status quo).

- Other operating expenses are slightly higher compared with status quo in cooperative and consolidated ownership models due to additional administrative costs.
- Collaborative partnerships offer 2% savings in other operating costs relative to status quo.
- Cooperative and consolidated ownership scenarios save substantially on the amount needed to cover replacement relative to status quo primarily due to a longer expected facility life in these scenarios.

Table 2. Percent Savings Relative to Status Quo (per gallon), Medium Sized Facility

	Cost of Fuel	Other Operating Expenses	Amount Needed to Cover Replacement
No Financing			
Status Quo	0%	0%	0%
Collaborative Partnerships	13%	2%	1%
Cooperative	13%	-14%	17%
Consolidated Ownership	13%	-10%	17%
Financing			
Status Quo	0%	0%	0%
Collaborative Partnerships	13%	2%	1%
Cooperative	13%	-14%	21%
Consolidated Ownership	13%	-10%	22%

Source: Northern Economics Analysis

Large Facility Results

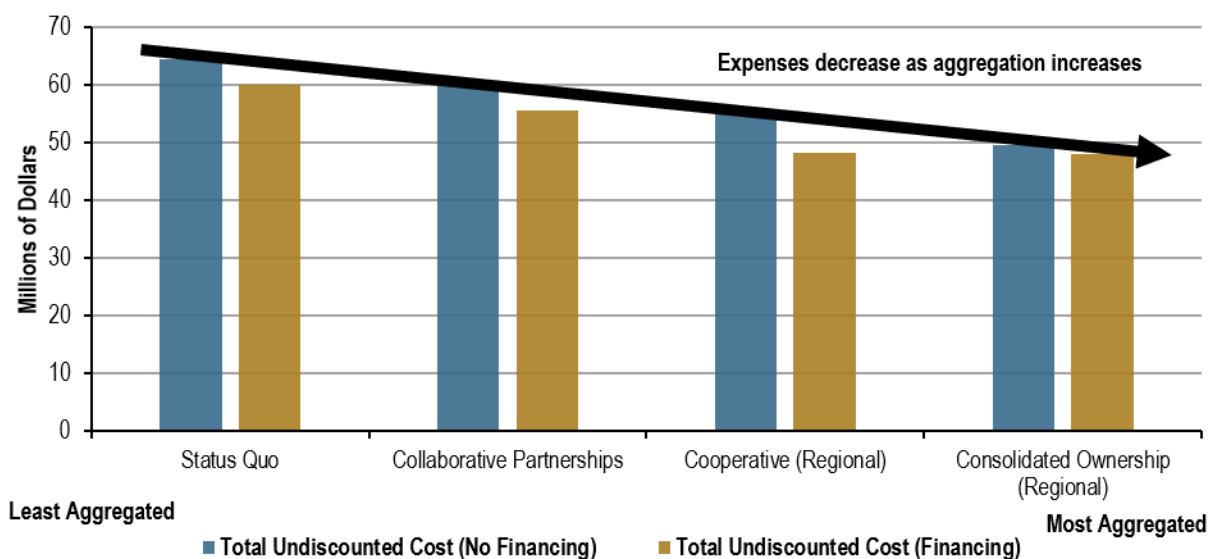
Large facilities were defined as facilities with annual throughput greater than 50,000 gallons of fuel. Examples of facilities in this size range in recent years include the publicly owned and operated facilities in Ambler, Kiana, and Golovin. The following example demonstrates the impacts of aggregation on financial performance of a 115,000-gallon throughput facility.

Total Expenses

Figure 6 shows total expenses for each aggregation scenario over the model's 50-year period, both with and without financing for facility replacement.

- Status quo is the most expensive scenario, and consolidated regional ownership is the least expensive scenario.
- Consolidated regional ownership saves an estimated 18% on general annual operating expenses, and 23% in total expenses compared with status quo over 50 years. This equals about \$672k per year in general operating expenses, not accounting for facility replacement.

Figure 5. Large Sized Facility Total Undiscounted Cost Over 50 Years



Source: Northern Economics analysis