

**Juneau Fixed Guideway Transit System (FGS) for increasing cruise ship visitor Carrying Capacity (CC), reducing CO2 emissi**

**DRAFT**

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Friends: please make this template you own; rename the file to begin your modeling "case" development  
 All components and numbers are Bill Leighty's ad hoc rough estimates; this template need professional help to achie

**NOTES**

Definitions:      CC: Carrying Capacity, annual total cruise ship passengers which Juneau, or other destination, can a significantly diminishing the quality of the visitor experience nor the quality of life in a concept without formal definition nor addressed in CBJ ordinances  
 Assumptions below are rough estimates, based on bus-based ground transportation;  
 FGS: Fixed guideway transportation system; in Juneau's case, a rail-based system like light rail, stree or Alstom hydrogen-fueled fuel cell train -- all running on hydroelectric energy  
 Capex: Capital expenditure, required to acquire and place in service a capital asset  
 Opex: Operating expense, typically recurring at daily to annual time scale: labor, energy, maintenanc  
 BEV: Battery electric vehicle; bus or other vehicle replacement of the old diesel buses now the backb  
 FCV: Fuel cell vehicle; bus or other vehicle replacement of the old diesel buses now the backbone of

Assume:

1	CC assumptions below are rough estimates, based on bus-based ground transportation; for discussion only			
	Juneau's CC in 2016	0.7	million	Actual cruise ship annual total pax      ??
	Juneau's CC in 2017	0.7	million	Actual cruise ship annual total pax      ??
	Juneau's CC in 2018	0.8	million	Actual cruise ship annual total pax      ??
	Juneau's CC in 2019	0.8	million	Actual cruise ship annual total pax      tbd
	Juneau's CC in 2021-2022	1.4	million	Potential ship annual total pax      tbd
	Juneau's CC increase, FGS	0.6	million	Potential CC increase      tbd

Miles

1	Base FGS system right of way (ROW) - A	14	"Jacobson Dock" to Mendenhall Glacier Visitc
2	Base FGS system right of way (ROW) - B	15	"Jacobson Dock" to Mendenhall Glacier Visitc
3	Optional added FGS ROW - C	3	Add connection to Auke bay via Back Loop Ro
3	Optional added FGS ROW - D	3	Add connection to Auke bay via Glacier Highv
4	Total FGS ROW: combo of A, B, C, D FGS is double track	14 to 18	Choose A or B, or combinations of A or B plus In most places; perhaps in all places
5	No ROW need be purchased		All ROW in public domain
6	No grade-separated intersections		None needed if FGS always has priority: cros:

- 7 Track installed in streets and roads
- 8 System operates on hydroelectric energy
- 7 Trains operate on hydrogen fuel, from hydropower
- 8 System always available to public, in special cars
- 9 System operates year-round with reduced rolling stock
- 10 School children will ride FGS above \_\_\_ years ago
- 12 Alstom train may be expanded in capacity by adding cars; perhaps self-propelled, perhaps not

FGS always has priority; shares ROW with oth  
 Via overhead catenary wire or via hydrogen-f  
 Choose "Alstom Train" drive system, to elimir  
 Cars may be branded, badged, liveried, deper  
 may be used by all visitors and residents on e  
 Outside Summer: Spare rolling stock may be s

13 CAPEX

Rolling stock:	40 cars @	3 \$ million each =	120 \$ million
Track, double:	15 miles @	3 \$ million each =	45 \$ million
Stations, ordinary:	20 stations @	2 \$ million each =	40 \$ million
Station, Mode change:	1 stations @	20 \$ million each =	20 \$ million
Maintenance barn:	1	40 \$ million each =	40 \$ million
Hydrogen fueling station:	1	50 \$ million each =	50 \$ million
Controls + crossing signals:	1	10 \$ million each =	10 \$ million
Personnel training: ops, maintenance		2 \$ million each =	2 \$ million
Design, planning, consulting		4 \$ million each =	4 \$ million
Contingency		35 \$ million each =	35 \$ million
ROW purchase		0	0
Grade-separated intersections		0	0
<b>Total Capex, gross, FGS</b>			<b>366 \$ million</b>

- 14 Deploy surplus FGS rolling stock "Outside" for 7 months: value offsets some capex amount
- 15 Major airlines (AS, DL) increase CC at JNU (?) Increase margins ?
- 16 FGS may carry some packages, freight, mail on special cars, perhaps at limited hours
- 17 How are small, independent, transport, tour, shorex companies affected ?
- 18 How are independent travelers affected ? JNU ? AMHS ferry terminal ?
- 19 Need tour bus style seating on the FGS cars. Problem ? 2 + 2 seating ?
- 20 Who owns FGS system ? Liable for costs, hazards, injuries, etc.
- 21 What are branding, livery, exclusivity requirements of cruise ships and other users ?
- 22 FGS sets stage for accommodating 2x - 3x Juneau population, higher density is naturally attracted to FGS stations
- 23 FGS stations must be indoors, heated, spacious, clean; restrooms ?
- 24 Juneau light duty vehicle (car, van, SUV, pickup truck) registered vehicles number = 25,000
- 25 Intangible values not reckoned:
  - Juneau reputation as a visitor destination
  - Juneau residents' QOL
  - CO2 emission costs; not internalized

## on and cost of living (COL)

ive credibility

ccommodate without  
the community;

; for discussion only  
tcar, a hybrid of these,

ce, depreciation  
none of visitor transportation  
visitor transportation

With ground transport entirely based on bus and other highway vehicles  
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With ground transport based to greatest extent useful on FGS  
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or Center (MGVC) via JNU airport: via Egan Drive median  
or Center (MGVC) via JNU airport: via Old Glacier Highway  
iad  
vay  
C or D

sing signals and gates may be required in a few places

ier traffic  
ueled, fuel cell electric drive ("Alstom Train": see References)  
rate overhead wires  
rding on business plans;  
every train, at every FGS station along route  
shipped south for 7-8 months service elsewhere

Hydrogen-fueled, fuel cell, "Alstom train"

Electrolysis, from hydro energy, via utility substation