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worksheet name: **cattle-beef**

includes:

- a. Estimates of Current (2007) Consumption of (i.e., demand for) Beef in the Marianas
- b. Estimates of Current (2007) and Target Cattle Production Levels for Target Market Penetration Levels
- c. Target Market and Cattle Production Assumptions and Calculations
- d. Sensitivity Analyses: # Head vs Slaughtering Rates

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worksheet name: **pigs-pork**

includes:

- a. Estimates of Current (2007) Consumption of (i.e., demand for) Pork in the Marianas
- b. Estimates of Current (2007) and Target Pig Production Levels for Target Market Penetration Levels
- c. Target Market and Pig Production Assumptions and Calculations
- d. Sensitivity Analyses: # Head vs Slaughtering Rates

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worksheet name: **simple analysis**

This is relatively simple and less accurate economic assessment of the economics (annual profit and loss) of a small slaughterhouse operation, with results in \$/year, \$/head, \$/lb-carcass weight basis, and \$/lb-meat sold basis. Calculations are provided for cattle (beef) and pigs (pork).

includes:

- a. Simplistic Economic Analysis for a Cattle Slaughterhouse & Beef Meat Business
- b. Simplistic Economic Analysis for a Pig Slaughterhouse & Pork Meat Business
- c. Figures (estimated) from Hawaii Beef Producers LLC (for comparison purposes)

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worksheet name: **economics**

includes:

- a. Introduction & Project Configuration (define scenarios, select the scenario to be analyzed)
- b. Key assumptions: Operations and Meat products & Prices
- c. Summary of Slaughtering Operations
- d. Summary of Production of Target Meat Products
- e. Summaries of Product Pricing & Sales Revenues
- f. Capital Costs
- g. Cost of animals - Summary; and Operating Expenses
- h. Other Economic & Financial Assumptions

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worksheet name: **proforma**

includes:

- a. Project proforma (projected income statement and cashflow)
- b. graphs of key performance characteristics of the proposed enterprise

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notes:

- a. blue font color indicates variable (user changeable)
- b. yellow-highlighted cell indicates key variable/assumption
- c. blue-highlighted cell indicates key output
- d. this is formatted to print on 3 pages, 8.5x11 potrait.

Estimates of Current (2007) and Target Cattle Production Levels for Target Market Penetration Levels

	Guam		total CNMI		Rota		Saipan		Tinian	
	2007	2002	2007	2002	2007	2002	2007	2002	2007	2002
year of USDA Agricultural Census:										
land and population										
population	180,865		75,771		20,979		29,617		25,175	
total land (sq mi)	210		118		33		46		39	
total land (acres)	134,265		75,771		20,979		29,617		25,175	
population density	862		1,920		640		640		640	
agricultural activities										
Total # farms	104	153	256	214	97	99	128	92	31	23
Agricultural land (acres)	1,000	1,648	4,013	2,353	770	879	1,172	802	2,071	672
Fraction of total land	0.7%	1.2%	5.3%	3.1%	3.7%	4.2%	4.0%	2.7%	8.2%	2.7%
Land in pasture (acres)	58	226	2,954	1,223	311	210	710	446	1,933	567
Fraction of land in pasture	5.8%	13.7%	73.6%	52.0%	40.4%	23.9%	60.6%	55.6%	93.3%	84.4%
inventories & sales										
# of cattle farms reporting inventory	13	12	63	55	17	29	25	15	21	11
Cattle & Calves inventory, # head	112	154	1,395	1,319	265	257	461	463	669	599
Average inventory, head/farm	8.6	12.8	22.1	24.0	15.6	8.9	18.4	30.9	31.9	54.5
Average stocking density, head/acre	1.9	0.7	0.5	1.1	0.9	1.2	0.6	1.0	0.3	1.1
# of cattle farms reporting sales	13	12	59	39	20	21	18	10	21	8
Cattle sold, # head/year	9	9	275	296	83	81	89	80	103	135
Average sales, head/year/farm	0.7	0.8	4.7	7.6	4.2	3.9	4.9	8.0	4.9	16.9
Target production for meeting a target fraction of each island's demand										
target market penetration	1.4%		1.4%		1.4%		1.4%		1.4%	
annual slaughter rate	335		88		6		77		6	
weekly slaughter rate	7		2		0		2		0	
growout duration	2.5		2.5		2.5		2.5		2.5	
target stocking density, head/acre	0.8		0.8		0.8		0.8		0.8	
additional pasture land required, acres	627		165		11		144		11	

note: these are total acres required to meet the assumed target demand on each island, regardless of which island(s) the acres are located.

data sources: All hard-entered data (in blue font) is from the USDA 2007 Agricultural Census

CNMI: <http://commerce.gov.mp/wp-content/uploads/2010/07/2007-CNMI-Agriculture-Census.pdf>

Guam: http://www.agcensus.usda.gov/Publications/2007/Full_Report/Outlying_Areas/guam.pdf

Estimates of Current (2007) Consumption of (i.e., demand for) Pork in the Marianas

	2007 total Marianas	2007 Guam	2007 total CNMI	2007 Rota	2007 Saipan	2007 Tinian	
per capita pork consumption		50.1	50.1	50.1	50.1	50.1	lbs/yr/person
residents							
population	227,687	180,865	46,822	3,282	40,000	3,540	
annual pork consumption	11,407,119	9,061,337	2,345,782	164,428	2,004,000	177,354	lbs/yr
estimated yield, carcass weight per pig	117	117	117	117	117	117	lbs/head
equivalent pigs consumed	97,700	77,600	20,100	1,400	17,200	1,500	head/year
herd factor	0.5	0.5	0.5	0.5	0.5	0.5	
equivalent standing inventory (total herd size)	44,942	35,696	9,246	644	7,912	690	# head
tourists							
arrivals	1,584,000	1,200,000	384,000	18,000	346,000	20,000	people/year
average duration	7	7	7	3	7	3	days
person-days	10,936,000	8,400,000	2,536,000	54,000	2,422,000	60,000	person-days
equivalent population	30,378	23,333	7,044	150	6,728	167	people
average consumption	0.139	0.139	0.139	0.139	0.139	0.139	lbs/person/day
annual pork consumption	1,521,927	1,169,000	352,927	7,515	337,062	8,350	lbs/year
estimated yield, carcass weight per pig	117	117	117	117	117	117	lbs/head
equivalent pigs consumed	13,000	10,000	3,000	100	2,900	100	head/year
growout duration	0.5	0.5	0.5	0.5	0.5	0.5	years
equivalent standing inventory (total herd size)	5,980	4,600	1,380	46	1,334	46	# head
combined							
equivalent population	258,065	204,198	53,866	3,432	46,728	3,707	people
annual pork consumption	12,929,046	10,230,337	2,698,709	171,943	2,341,062	185,704	lbs/year
equivalent pigs consumed	110,700	87,600	23,100	1,500	20,100	1,600	head/year
equivalent standing inventory (total herd size)	50,922	40,296	10,626	690	9,246	736	# head
existing herd size	2,118	635	1,483	240	1,042	201	# head
existing sales	1,031	356	675	184	348	143	
existing sales / existing consumption	0.9%	0.4%	2.9%	12.3%	1.7%	8.9%	

notes:

- 1 The average duration of tourist stays in the islands is an estimate; no definitive data was available from the tourism authorities.
- 2 The per capita consumption figure is average U.S. data; source: USDA: http://www.ers.usda.gov/publications/ldp/xlstables/Meat/WASDE_pork.xls
- 3 The "equivalent required market herd size" does NOT include bulls, culls, and other herd components needed to ensure a sustainable/growing herd.
- 4 These figures do not include estimates of any possible export markets.

Estimates of Current (2007) and Target Pig Production Levels for Target Market Penetration Levels

	Guam		total CNMI		Rota		Saipan		Tinian	
	2007	2002	2007	2002	2007	2002	2007	2002	2007	2002
year of USDA Agricultural Census:										
land and population										
population	180,865		75,771		20,979		29,617		25,175	
total land (sq mi)	210		118		33		46		39	
total land (acres)	134,265		75,771		20,979		29,617		25,175	
population density	862		1,920		640		640		640	
agricultural activities										
Total # farms	104	153	256	214	97	99	128	92	31	23
Agricultural land (acres)	1,000	1,648	4,013	2,353	770	879	1,172	802	2,071	672
Fraction of total land	0.7%	1.2%	5.3%	3.1%	3.7%	4.2%	4.0%	2.7%	8.2%	2.7%
Land in pasture (acres)	58	226	2,954	1,223	311	210	710	446	1,933	567
Fraction of land in pasture	5.8%	13.7%	73.6%	52.0%	40.4%	23.9%	60.6%	55.6%	93.3%	84.4%
inventories & sales										
# of pigs farms reporting inventory	22	34	62	61	23	36	28	18	11	7
pigs inventory, # head	635	675	1,483	2,242	240	420	1,042	1,628	201	194
Average inventory, head/farm	28.9	19.9	23.9	36.8	10.4	11.7	37.2	90.4	18.3	27.7
# of pigs farms reporting sales	20	31	50	42	21	31	23	7	6	4
pigs sold, # head/year	356	764	675	3,039	184	272	348	2,683	143	84
Average sales, head/year/farm	17.8	24.6	13.5	72.4	8.8	8.8	15.1	383.3	23.8	21.0
Target production for meeting a target fraction of each island's demand										
target market penetration	2.8%		2.8%		2.8%		2.8%		2.8%	
annual slaughter rate	2,453		650		42		563		45	
weekly slaughter rate	51		14		1		12		1	

data sources: All hard-entered data (in blue font) is from the USDA 2007 Agricultural Census

CNMI: <http://commerce.gov.mp/wp-content/uploads/2010/07/2007-CNMI-Agriculture-Census.pdf>

Guam: http://www.agcensus.usda.gov/Publications/2007/Full_Report/Outlying_Areas/guam.pdf

Target Market and Pig Production Assumptions and Calculations

	Guam	Rota	Saipan	Tinian	Total
total pork consumption	10,230,000	172,000	2,341,000	186,000	12,929,000 lbs/yr
equivalent # pigs consumed	87,600	1,500	20,100	1,600	110,800 head/yr
equivalent market herd size	40,296	690	9,246	736	50,968 head
2007 herd size	635	240	1,042	201	2,118 head
illustrative market penetration					2.8%
associated market					362,000 lbs/yr
equivalent # of pigs to be slaughtered to meet the target market					3,102 head/yr
assumed grow-out duration					0.4 years
estimated sows (& boars) ratio to market pigs					15%
herd size factor					(total herd size / # marketed pigs per year) 0.5
required standing inventory (total herd size)					1,427 head

sensitivity analysis:

required inventory (# head) vs. target market and grow-out duration

		illustrative market penetration						
		1.5%	2.0%	2.5%	3.0%	3.5%	4.0%	4.5%
grow-out, years	0.3	573	765	956	1,147	1,338	1,529	1,720
	0.4	765	1,019	1,274	1,529	1,784	2,039	2,294
	0.5	956	1,274	1,593	1,911	2,230	2,548	2,867
	0.6	1,147	1,529	1,911	2,294	2,676	3,058	3,440
	0.7	1,338	1,784	2,230	2,676	3,122	3,568	4,014
	0.8	1,529	2,039	2,548	3,058	3,568	4,077	4,587

Sensitivity Analyses: # Head vs Slaughtering Rates

pig production required to meet a target market penetration rate

daily rate	10 head / day
weekly rate	3 operating days / week
annual rate	1,440 head / year
% of current demand	1.6% /year in Guam

required herd size to support the target market pork production

herd size factor	0.5
total herd inventory	662 # of head

sensitivity analysis:

pigs slaughtered and marketed per year

	slaughtering days / week				
	1	2	3	4	5
4	192	384	576	768	960
6	288	576	864	1,152	1,440
8	384	768	1,152	1,536	1,920
10	480	960	1,440	1,920	2,400
12	576	1,152	1,728	2,304	2,880
14	672	1,344	2,016	2,688	3,360
16	768	1,536	2,304	3,072	3,840
18	864	1,728	2,592	3,456	4,320
20	960	1,920	2,880	3,840	4,800
22	1,056	2,112	3,168	4,224	5,280

sensitivity analysis:

estimated total herd size required for the target annual production

	slaughtering days / week				
	1	2	3	4	5
4	88	177	265	353	442
6	132	265	397	530	662
8	177	353	530	707	883
10	221	442	662	883	1,104
12	265	530	795	1,060	1,325
14	309	618	927	1,236	1,546
16	353	707	1,060	1,413	1,766
18	397	795	1,192	1,590	1,987
20	442	883	1,325	1,766	2,208
22	486	972	1,457	1,943	2,429

Simplistic Economic Analysis for a Cattle Slaughterhouse & Beef Meat Business

	basis of each economic analysis:			\$ / year	\$ / head	\$ / lb of carcass	\$ / lb of meat sold
	range considered		used in this analysis				
	low	high					
operation							
# head / day	1	8	3		head / day		
# days / week	1	5	3		days / week		
# weeks / year	50	50	50		weeks / year		
# head / year				450	head / year		
average live weight	800	1,200	1,000		lb / head		
carcass yield	50%	54%	52%		% of live weight		
carcass weight				520	lbs/head, carcass weight		
marketable product yield	42%	85%	60%		% of live weight		
				600	lbs/head, marketed weight		
# lbs - carcass weight				234,000	lbs / year		
# lbs of meat products / year				270,000	lbs / year		
capex							
site & holding pens	\$5,000	\$15,000	\$9,000		\$2	\$0.00	\$0.00
slaughterhouse facility	\$50,000	\$250,000	\$120,000		\$27	\$0.05	\$0.04
chiller	\$20,000	\$40,000	\$30,000		\$7	\$0.01	\$0.01
further processing facility	\$20,000	\$60,000	\$40,000		\$9	\$0.02	\$0.01
generator	\$15,000	\$25,000	\$20,000		\$4	\$0.01	\$0.01
waste management	-	\$100,000	\$40,000		\$9	\$0.02	\$0.01
other (e.g., site prep, utilities)	-	\$100,000	\$40,000		\$9	\$0.02	\$0.01
capex grant					-	-	-
subtotal				\$299,000	\$66	\$0.13	\$0.11
service life of facility	5	15	10				
amortized capex				\$29,900	\$7	\$0.01	\$0.01
opex							
labor							
burdened cost per person	\$20,000	\$30,000	\$25,000		\$/person/year		
# people (FTEs)	-	10	4		# people/year		
cost/year				\$100,000	\$222	\$0.43	\$0.37
utilities	\$500	\$12,000	\$6,000		\$13	\$0.03	\$0.02
maintenance	\$1,000	\$12,000	\$6,000		\$13	\$0.03	\$0.02
chemicals etc	\$500	\$6,000	\$3,000		\$7	\$0.01	\$0.01
office related	\$500	\$6,000	\$3,000		\$7	\$0.01	\$0.01
marketing	-	\$12,000	\$6,000		\$13	\$0.03	\$0.02
wrapping & labeling materials							
cost/lb	\$0.05	\$0.25	\$0.15		\$/lb		
subtotal				\$40,500	\$90	\$0.17	\$0.15
transport to market							
cost/lb	\$0.05	\$1.00	\$0.30		\$/lb		
subtotal				\$81,000	\$180	\$0.35	\$0.30
total opex				\$245,500	\$546	\$1.05	\$0.91
total capex and opex				\$275,400	\$552	\$1.06	\$0.92

The edible (marketable) meat yield in the Marianas is higher than the carcass yield because of the anticipated high fraction of edible offal and non-carcass marketable products.

For comparison purposes, the marketable beef meat product yield in the mainland U.S. is 5%~10% less than the carcass weight.

The capital cost (capex) and operating cost (opex) figures shown here are not "recommended" figures nor comprehensive figures, but reflect rough estimates based on group discussions with stakeholders in the Marianas in May'11 -- the figures and calculations presented here are intended to illustrate certain cost principles (e.g., the relatively small fraction that capex constitutes in the total \$/pound of marketable meat products).

Simple Summary Economic Analysis

cost of animal, live weight	\$0.50	\$1.00	\$0.75	\$/lb				% of total
cost of animals			\$337,500	\$750	\$1.44	\$1.25		48%
amortized capex from above			\$29,900	\$7	\$0.01	\$0.01		0%
opex from above			\$245,500	\$546	\$1.05	\$0.91		35%
margin								
percentage	15%	25%	20%					
amount			\$122,580	\$272	\$0.52	\$0.45		17%
total costs			\$735,480	\$1,575	\$3.03	\$2.62		100%
minimum average wholesale price of meat					\$3.03	\$2.62	\$/lb	
assumed wholesale:retail factor	55%	85%	70%					
equivalent average retail price of meat products sold						\$3.75	\$/lb	

notes:

assumptions in blue font; key assumptions highlighted in yellow; key outputs highlighted in blue.

Simplistic Economic Analysis for a Pig Slaughterhouse & Pork Meat Business

	basis of each economic analysis:			\$ / year	\$ / head	\$ / lb of carcass	\$ / lb of meat sold	
	range considered		used in this analysis					
	low	high						
operation								
# head / day	1	8	10		head / day			
# days / week	1	5	3		days / week			
# weeks / year	50	50	50		weeks / year			
# head / year				1,500	head / year			
average live weight	800	1,200	160		lb / head			
carcass yield	50%	54%	73%		% of live weight			
carcass weight				117	lbs/head, carcass weight			
marketable product yield	42%	85%	75%		% of live weight			
				120	lbs/head, marketed weight			
# lbs - carcass weight				175,200	lbs / year			
# lbs of meat products / year				180,000	lbs / year			
capex								
site & holding pens	\$5,000	\$15,000	\$9,000		\$1	\$0.01	\$0.01	
slaughterhouse facility	\$50,000	\$250,000	\$120,000		\$8	\$0.07	\$0.07	
chiller	\$20,000	\$40,000	\$30,000		\$2	\$0.02	\$0.02	
further processing facility	\$20,000	\$60,000	\$40,000		\$3	\$0.02	\$0.02	
generator	\$15,000	\$25,000	\$20,000		\$1	\$0.01	\$0.01	
waste management	-	\$100,000	\$40,000		\$3	\$0.02	\$0.02	
other (e.g., site prep, utilities)	-	\$100,000	\$40,000		\$3	\$0.02	\$0.02	
capex grant					-	-	-	
subtotal				\$299,000	\$20	\$0.17	\$0.17	
service life of facility	5	15	10					
amortized capex				\$29,900	\$2	\$0.02	\$0.02	
opex								
labor								
burdened cost per person	\$20,000	\$30,000	\$25,000		\$/person/year			
# people (FTEs)	-	10	4		# people/year			
cost/year				\$100,000	\$67	\$0.57	\$0.56	
utilities	\$500	\$12,000	\$6,000		\$4	\$0.03	\$0.03	
maintenance	\$1,000	\$12,000	\$6,000		\$4	\$0.03	\$0.03	
chemicals etc	\$500	\$6,000	\$3,000		\$2	\$0.02	\$0.02	
office related	\$500	\$6,000	\$3,000		\$2	\$0.02	\$0.02	
marketing	-	\$12,000	\$6,000		\$4	\$0.03	\$0.03	
wrapping & labeling materials								
cost/lb	\$0.05	\$0.25	\$0.15		\$/lb			
subtotal				\$27,000	\$18	\$0.15	\$0.15	
transport to market								
cost/lb	\$0.05	\$1.00	\$0.30		\$/lb			
subtotal				\$54,000	\$36	\$0.31	\$0.30	
total opex				\$205,000	\$137	\$1.17	\$1.14	
total capex and opex				\$234,900	\$139	\$1.19	\$1.16	
Simple Summary Economic Analysis								
cost of animal, live weight	\$0.50	\$1.00	\$1.00		\$/lb		% of total	
cost of animals				\$240,000	\$160	\$1.37	\$1.33	44%
amortized capex from above				\$29,900	\$2	\$0.02	\$0.02	1%
opex from above				\$205,000	\$137	\$1.17	\$1.14	38%
margin								
percentage	15%	25%	20%					
amount				\$94,980	\$63	\$0.54	\$0.53	17%
total costs				\$569,880	\$362	\$3.10	\$3.02	100%
minimum average wholesale price of meat						\$3.10	\$3.02	
assumed wholesale:retail factor	55%	85%	70%					
equivalent average retail price of meat products sold							\$4.31	\$/lb

The edible (marketable) meat yield in the Marianas is higher than the carcass yield because of the anticipated high fraction of edible offal and non-carcass products that can be marketed locally.

The capital cost (capex) and operating cost (opex) figures shown here are not "recommended" figures nor comprehensive figures, but reflect rough estimates based on group discussions with stakeholders in the Marianas in May'11 -- the figures and calculations presented here are intended to illustrate certain cost principles (e.g., the relatively small fraction that capex constitutes in the total \$/pound of marketable meat products).

notes:

assumptions in blue font; key assumptions highlighted in yellow; key outputs highlighted in blue.

Note: these calculations are illustrative and indicative only, and should not be relied on for design or investment decision making; a specific business should seek professional assistance for its own design and financial forecasting.

Figures (estimated) from Hawaii Beef Producers LLC (for comparison purposes)

	market cattle	cull cows	total
current operations			
# head / day			50
# days / week			2
# weeks / year			48
# head / year			4,800
average live weight	1,250	1,050	1,170
carcass yield	52%	52%	
average carcass weight	650	550	610
fractions slaughtered	60%	40%	

labor requirements & productivity

The facility has 14 full-time workers; work shifts are 10 hours. During the two slaughtering days each week, eight (8) workers work full-time on slaughtering floor, with the remaining six (6) working in further processing. During the other days, all fourteen (14) workers work in further processing.

# of head slaughtered per employee per day	6.3
# of head slaughtered per employee per hour	0.6

economics

highest price paid for cattle			\$1.35 /lb of carcass weight
equivalent price - live weight			\$0.70 /lb of live weight
	\$880	\$739	\$824 /animal

custom slaughtering & processing

custom work includes USDA-inspected slaughtering, chilling and aging, and cut & wrap (vacuum sealed).

(only a small fraction of cattle slaughtered/processed are custom jobs)

charges for custom work	\$0.80	/lb of carcass weight
equivalent price - live weight	\$0.42	/lb of live weight
	\$521	/animal

Note: these calculations are illustrative and indicative only, and should not be relied on for design or investment decision making; a specific business should seek professional assistance for its own design and financial forecasting.

Project Economic & Financial Analysis

Steps in the economic & financial analysis:

1. Define up to six **Enterprise scenarios** to be evaluated, in cell # \$F\$27
 Select the one to analyze and enter the scenario # in cell # \$E\$33
2. Define **Key Assumptions** re operations and live weight cost.
3. Define which **Meat Products** the enterprise intends to sell,
 and define the target retail **prices** and wholesale/retail pricing fractions.
4. Review the **Summary of Slaughtering Operations**.
5. Review the **Summary of Production of Target Meat Products**.
6. Review the **Summaries of Product Pricing and Sales Revenues**.
7. Estimate the **Capital Costs** for the size of operation defined & selected in step #1.
8. Estimate the **Operating Expenses** for the size of operation defined & selected in step #1.
9. Estimate the **Other Economic and Financial Assumptions**.
10. Review the Results of the analyses (see below);
 make whatever revisions are desired and re-run the analyses;
11. Review the **Project Proforma** on the proforma worksheet tab.
 Also review the graphic outputs on the proforma tab.

Enterprise configuration

	#	cattle	pigs	goats / sheep
target slaughtering rate, head / day				
scenario #	1	3	10	2
scenario #	2	5		
scenario #	3		25	
scenario #	4			10
scenario #	5	2	15	
scenario #	6	4	10	
scenario # selected =	5	2	15	0
fractions of total live weight =		25%	30%	0%
fractions of total carcass weight =		37%	63%	0%
% of current demand =		0.9%	1.9%	

Results

project financial performance

IRR	5.7%
NPV	\$319,000
first year of positive cash flow	Year 6
first year of positive Σ cash flow	Year 12

Note: these calculations are illustrative and indicative only, and should not be relied on for design or investment decision making; a specific business should seek professional assistance for its own design and financial forecasting.

Key Assumptions

Operations

facility operating time

hours per day	8
days per week for slaughtering	3
weeks per year	48

		cattle	pigs	goats / sheep	totals (wtd avgs)
target slaughtering rate	head/day	2	15	0	
	head/year	288	2,160	-	2,448
average live weight	pounds/animal	1000	160	60	473
carcass yield	live weight basis	52%	73%	50%	65%
dressed (carcass) yield	pounds/animal	520	116.8	30	164
weight / year	pounds/year	149,760	252,288	-	402,048
live weight cost	\$/animal	\$700	\$160	\$45	\$224
	\$/lb live weight	\$0.700	\$1.000	\$0.750	89%
carcass weight cost	\$/lb carcass weight	\$1.35	\$1.37	\$1.50	
marketable product yield	live weight basis	60%	80%	#DIV/0!	#DIV/0!

(net of further processing, and including edible offal / non-carcassed-derived marketable products)

Meat Products & Prices

define products & prices

carcasses / quarters

	beef	pork	goat / mutton	totals (wtd avgs)
product sales, % of carcass weight	0%	0%	100%	0%
estimated price of retail products	\$3.00	\$3.00	\$3.00	\$3.00 /lb
estimated wholesale/retail fraction	40%	40%	40%	40%
estimated selling price (wholesale)	\$1.20	\$1.20	\$1.20	\$1.20 /lb

primal cuts

product sales, % of carcass weight	20%	20%	0%	20%
estimated price of retail products	\$4.50	\$4.00	\$4.00	\$4.19 /lb
estimated wholesale/retail fraction	52%	55%	52%	54%
estimated selling price (wholesale)	\$2.34	\$2.20	\$2.08	\$2.25 /lb

ground meat

product sales, % of carcass weight	30%	0%	0%	11%
estimated price of retail products	\$3.50	\$3.50	\$3.00	\$3.50 /lb
estimated wholesale/retail fraction	62%	62%	62%	62%
estimated selling price (wholesale)	\$2.17	\$2.17	\$1.86	\$2.17 /lb

stew meat

product sales, % of carcass weight	10%	10%	0%	10%
estimated price of retail products	\$4.00	\$4.00	\$4.00	\$4.00 /lb
estimated wholesale/retail fraction	62%	62%	62%	62%
estimated selling price (wholesale)	\$2.48	\$2.48	\$2.48	\$2.48 /lb

retail cuts

product sales, % of carcass weight	35%	65%	0%	54%
estimated price of retail products	\$4.50	\$4.00	\$4.00	\$4.19 /lb
estimated wholesale/retail fraction	62%	62%	62%	62%
estimated selling price (wholesale)	\$2.79	\$2.48	\$2.48	\$2.60 /lb

total fraction of carcass weight selected

	95%	95%	100%	95%
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edible offal

estimated selling price (wholesale)	\$1.00	\$1.00	\$1.00	\$1.00 /lb
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Summary of Slaughtering Operations

summaries of operations	hrs/day	days/week	weeks/year	hrs/week	hrs/year
slaughtering	8	3	48	24	144
processing	8	2	48	16	96

Summary of slaughtering rates

cattle	pigs	goats/sheep	totals
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target slaughter rates

net design slaughter rate	head/day	2	15		17
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net target slaughtering rates

average	head per hour	0.3	1.9	-	2
maximum	head per day	2	15	-	17
maximum	head per week	6	45	-	51
maximum	head per year	288	2,160	-	2,448

average live weights pounds/head

1,000	160
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live weights of animals received and slaughtered

average	pounds per hour	250	300	-	550
maximum	pounds per day	2,000	2,400	-	4,400
maximum	pounds per week	6,000	7,200	-	13,200
maximum	pounds per year	288,000	345,600	-	633,600
maximum	tons per year	144	173	-	317

average carcass yields

52%	73%
-----	-----

carcass weights of animals slaughtered

average	pounds per hour	130	219	-	349
maximum	pounds per day	1,040	1,752	-	2,792
maximum	pounds per week	3,120	5,256	-	8,376
maximum	pounds per year	149,760	252,288	-	402,048
maximum	tons per year	75	126	-	201

Slaughtering summaries

	cattle	pigs	goats/sheep	totals	
slaughtering - live weight	288,000	345,600	-	633,600	lbs per year
slaughtering - dressed (carcass) weight	149,760	252,288	-	402,048	lbs per year
processing into products					
carcasses / quarters	-	-	-	-	lbs per year
primal cuts	29,952	50,458	-	80,410	lbs per year
ground meat	44,928	-	-	44,928	lbs per year
stew meat	14,976	25,229	-	40,205	lbs per year
retail cuts	52,416	163,987	-	216,403	lbs per year
subtotals	142,272	239,674	-	381,946	lbs per year
estimated scraps from further processing	7,488	12,614	-	20,102	lbs per year
scrap fraction of carcass	5%	5%	#DIV/0!	5%	
edible offal / other marketable products	31,795	35,459	-	67,254	lbs per year
total marketable products	174,067	275,132	-	469,302	lbs per year
fraction of live weight	60%	80%	#DIV/0!	74%	

Note: these calculations are illustrative and indicative only, and should not be relied on for design or investment decision making; a specific business should seek professional assistance for its own design and financial forecasting.

Summary of Production of Target Meat Products

	beef	pork	goat/mutton	totals
product #1: carcasses / quarters				
% of carcasses sold as product #1				
pounds per hour	-	-	-	-
pounds per day	-	-	-	-
pounds per week	-	-	-	-
pounds per year	-	-	-	-
tons per year	-	-	-	-
product #2: primal cuts				
% of carcasses sold as product #2	20%	20%		
pounds per hour	26	44	-	70
pounds per day	208	350	-	558
pounds per week	624	1,051	-	1,675
pounds per year	29,952	50,458	-	80,410
tons per year	15	25	-	40
product #3: ground meat				
% of carcasses sold as product #3	30%			
pounds per hour	39	-	-	39
pounds per day	312	-	-	312
pounds per week	936	-	-	936
pounds per year	44,928	-	-	44,928
tons per year	22	-	-	22
product #4: stew meat				
% of carcasses sold as product #4	10%	10%		
pounds per hour	13	22	-	35
pounds per day	104	175	-	279
pounds per week	312	526	-	838
pounds per year	14,976	25,229	-	40,205
tons per year	7	13	-	20
product #5: retail cuts				
% of carcasses sold as product #5	35%	65%		
pounds per hour	46	142	-	188
pounds per day	364	1,139	-	1,503
pounds per week	1,092	3,416	-	4,508
pounds per year	52,416	163,987	-	216,403
tons per year	26	82	-	108
product #6: edible offal				
target fraction of non-carcass weight	23%	38%	20%	
pounds per hour	3	4	-	7
pounds per day	28	31	-	58
pounds per week	662	739	-	1,401
pounds per year	31,795	35,459	-	67,254
tons per year	17	48	-	65

note: these assumed values are significantly higher for the Marianas than they would be for the mainland U.S.

Note: these calculations are illustrative and indicative only, and should not be relied on for design or investment decision making; a specific business should seek professional assistance for its own design and financial forecasting.

Summaries of Product Pricing & Sales Revenues

		beef	pork	goat/mutton	totals
product #1:	carcasses / quarters				
estimated retail price	\$/lb	\$3.00	\$3.00	\$3.00	
estimated wholesale/retail fraction		40%	40%	40%	
estimated wholesale price	\$/lb	\$1.20	\$1.20	\$1.20	
quantity produced	lbs/year	-	-	-	-
target sales revenues	\$/year	-	-	-	-
product #2:	primal cuts				
estimated retail price	\$/lb	\$4.50	\$4.00	\$4.00	
estimated wholesale/retail fraction		52%	55%	52%	
estimated wholesale price	\$/lb	\$2.34	\$2.20	\$2.08	
quantity produced	lbs/year	29,952	50,458	-	80,410
target sales revenues	\$/year	\$70,088	\$111,007	-	\$181,094
product #3:	ground meat				
estimated retail price	\$/lb	\$3.50	\$3.50	\$3.00	
estimated wholesale/retail fraction		62%	62%	62%	
estimated wholesale price	\$/lb	\$2.17	\$2.17	\$1.86	
quantity produced	lbs/year	44,928	-	-	44,928
target sales revenues	\$/year	\$97,494	-	-	\$97,494
product #4:	stew meat				
estimated retail price	\$/lb	\$4.00	\$4.00	\$4.00	
estimated wholesale/retail fraction		62%	62%	62%	
estimated wholesale price	\$/lb	\$2.48	\$2.48	\$2.48	
quantity produced	lbs/year	14,976	25,229	-	40,205
target sales revenues	\$/year	\$37,140	\$62,567	-	\$99,708
product #5:	retail cuts				
estimated retail price	\$/lb	\$4.50	\$4.00	\$4.00	
estimated wholesale/retail fraction		62%	62%	62%	
estimated wholesale price	\$/lb	\$2.79	\$2.48	\$2.48	
quantity produced	lbs/year	52,416	163,987	-	216,403
target sales revenues	\$/year	\$146,241	\$406,688	-	\$552,929
product #6:	edible offal				
estimated selling price	\$/lb	\$1.00	\$1.00	\$1.00	
quantity produced	lbs/year	31,795	35,459	-	67,254
target sales revenues	\$/year	\$31,795	\$35,459	-	\$67,254
summaries: gross annual revenues					
carcasses / quarters		-	-	-	-
primal cuts		\$70,088	\$111,007	-	\$181,094
ground meat		\$97,494	-	-	\$97,494
stew meat		\$37,140	\$62,567	-	\$99,708
retail cuts		\$146,241	\$406,688	-	\$552,929
edible offal		\$31,795	\$35,459	-	\$67,254
totals		\$382,758	\$615,721	-	\$998,479

Note: these calculations are illustrative and indicative only, and should not be relied on for design or investment decision making; a specific business should seek professional assistance for its own design and financial forecasting.

Capital Costs

	\$/unit	# units	amount
capital costs			
site			
land	-	1	-
site preparation	\$2,000	1	\$2,000
utilities to the site/building	-	1	-
liquid waste management	\$10,000	1	\$10,000
solid waste management	\$25,000	1	\$25,000
parking, fencing, other	\$10,000	1	\$10,000
other	-	-	-
subtotal			\$47,000
slaughterhouse			
animal unloading & cull re-loading	\$10,000	1	\$10,000
animal holding pens	\$20,000	1	\$20,000
building	\$60,000	1	\$60,000
equipment	\$60,000	1	\$60,000
instrumentation & controls	\$15,000	1	\$15,000
plumbing	\$10,000	1	\$10,000
electrical	\$10,000	1	\$10,000
air conditioning & ventilation	\$10,000	1	\$10,000
water heater	\$2,000	1	\$2,000
cold storage	\$60,000	1	\$60,000
back-up generator	\$20,000	1	\$20,000
office equipment	\$10,000	1	\$10,000
cleaning equipment	\$10,000	1	\$10,000
other	-	1	-
subtotal			\$297,000
processing facility			
building	\$60,000	1	\$60,000
equipment	\$40,000	1	\$40,000
instrumentation & controls	\$15,000	1	\$15,000
plumbing	\$10,000	1	\$10,000
electrical	\$10,000	1	\$10,000
air conditioning & ventilation	\$10,000	1	\$10,000
cold storage	\$40,000	1	\$40,000
back-up generator	\$20,000	1	\$20,000
office equipment	\$5,000	1	\$5,000
cleaning equipment	\$5,000	1	\$5,000
other	-	1	-
subtotal			\$215,000
summary			
site			\$47,000
slaughterhouse			\$297,000
processing facility			\$215,000
contingencies	10%		\$55,900
			\$559,000

Note: these calculations are illustrative and indicative only, and should not be relied on for design or investment decision making; a specific business should seek professional assistance for its own design and financial forecasting.

Cost of animals - Summary

	beef	pork	goat/mutton	totals
\$/head (live weight)	\$700	\$160	\$45	
\$/lb (live weight)	\$0.70	\$1.00	#DIV/0!	
\$/lb (carcass weight)	\$1.35	\$1.37	\$1.50	
\$/year	\$201,600	\$345,600	-	\$547,200

Operating Expenses

fixed operating expenses	\$/unit	units	# units	\$/year
labor				
general manager	\$40,000	/year	1	\$40,000
meat cutter	\$25,000	/year	1	\$25,000
assistant	\$18,000	/year	2	\$36,000
subtotal				\$101,000
USDA inspection				
inspector	\$75,000	/year	0	-
travel expenses	\$12,000	/year	0	-
subtotal				-
utilities				
water	\$300	/month	12	\$3,600
electricity	\$1,000	/month	12	\$12,000
sewer (non-SH waste)	\$50	/month	12	\$600
waste management	\$3,000	/month	12	\$36,000
subtotal				\$52,200
other				
solutions and supplies	\$500	/month	12	\$6,000
office-related	\$500	/month	12	\$6,000
maintenance	\$1,000	/month	12	\$12,000
property taxes	\$1,000	/month	12	\$12,000
advertizing and marketing	\$2,000	/month	12	\$24,000
G&A	\$2,000	/month	12	\$24,000
other	-	/month	12	-
subtotal				\$84,000
subtotal fixed opex				\$237,200
variable operating expenses				
wrapping and packaging	\$0.25	/pound	381,946	\$95,486
product transport to markets				
local markets				
fraction of products	80%	of products are sold on-island		
amount	\$0.08	/pound	305,556	\$24,445
off-island				
fraction of products	20%	of products (by weight) are sold off-island		
amount	\$0.45	/pound	76,389	\$34,375
subtotal transport				\$58,820
subtotal variable opex				\$154,306

Note: these calculations are illustrative and indicative only, and should not be relied on for design or investment decision making; a specific business should seek professional assistance for its own design and financial forecasting.

Other Economic & Financial Assumptions

annual inflation factors

product sales	2.25%	/year
fixed operating expenses	2.25%	/year
variable operating expenses	2.25%	/year
cost of animals	2.25%	/year

project financing

estimated capital cost of facilities	\$559,000	
estimated working capital required	\$98,000	
grant to off-set capital cost, if any		
subtotal estimated capital cost	\$657,000	
working capital calculations		
estimated capital costs	\$559,000	
less capital grant	-	
net estimated capex	\$559,000	
estimated operating expenses	\$392,000	per year
working capital		
duration	3	months
amount	\$98,000	
total capital cost	\$657,000	
equity fraction (of net capex)	50%	
equity required	\$328,500	
balance to be financed	\$328,500	
debt financing		
duration of debt financing	5	years
debt interest rate	8.0%	APR
	\$82,275	/year
depreciation (straight line)		
duration	7	years
amount	\$93,857	/year

project financial performance

IRR (on cash flow)	5.7%
NPV (on cash flow from Y1)	\$319,000
discount rate	6%
first year of positive cash flow	Year 6
first year of positive Σ cash flow	Year 12

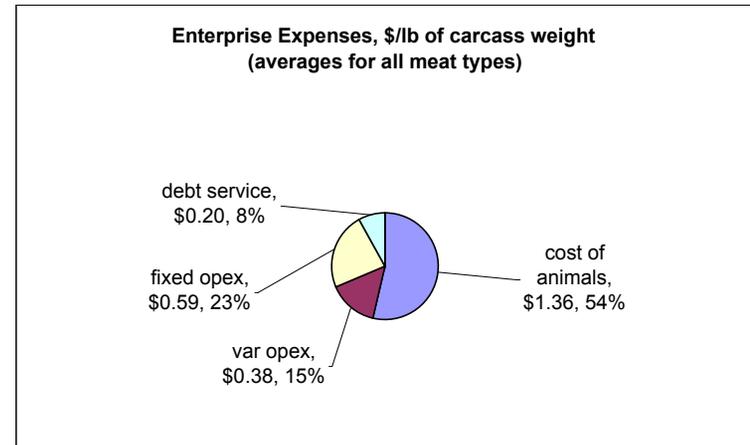
Note: these calculations are illustrative and indicative only, and should not be relied on for design or investment decision making; a specific business should seek professional assistance for its own design and financial forecasting.

Project Proforma**operating year**

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	totals
Revenues	<i>all figures in thousands of dollars</i>																
product sales																	
carcasses / quarters	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
primal cuts	\$181	\$185	\$189	\$194	\$198	\$202	\$207	\$212	\$216	\$221	\$226	\$231	\$237	\$242	\$247	\$247	\$3,189
ground meat	\$98	\$100	\$102	\$104	\$107	\$109	\$111	\$114	\$117	\$119	\$122	\$125	\$127	\$130	\$133	\$133	\$1,717
stew meat	\$100	\$102	\$104	\$107	\$109	\$111	\$114	\$117	\$119	\$122	\$125	\$127	\$130	\$133	\$136	\$136	\$1,756
retail cuts	\$553	\$565	\$578	\$591	\$604	\$618	\$632	\$646	\$661	\$676	\$691	\$706	\$722	\$738	\$755	\$755	\$9,737
edible offal	\$67	\$69	\$70	\$72	\$74	\$75	\$77	\$79	\$80	\$82	\$84	\$86	\$88	\$90	\$92	\$92	\$1,184
total revenues	\$998	\$1,021	\$1,044	\$1,067	\$1,092	\$1,116	\$1,141	\$1,167	\$1,193	\$1,220	\$1,247	\$1,275	\$1,304	\$1,333	\$1,363	\$1,363	\$17,582
Cost of Goods Sold																	
cost of animals																	
cattle	\$202	\$206	\$211	\$216	\$220	\$225	\$230	\$236	\$241	\$246	\$252	\$258	\$263	\$269	\$275	\$275	\$3,550
pigs	\$346	\$353	\$361	\$370	\$378	\$386	\$395	\$404	\$413	\$422	\$432	\$441	\$451	\$462	\$472	\$472	\$6,086
goats / sheep	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
variable operating expenses	\$154	\$158	\$161	\$165	\$169	\$172	\$176	\$180	\$184	\$189	\$193	\$197	\$202	\$206	\$211	\$211	\$2,717
total CGS	\$702	\$717	\$733	\$750	\$767	\$784	\$802	\$820	\$838	\$857	\$876	\$896	\$916	\$937	\$958	\$958	\$12,353
Gross Margin	\$297	\$304	\$310	\$317	\$325	\$332	\$339	\$347	\$355	\$363	\$371	\$379	\$388	\$397	\$405	\$405	\$5,229
Operating Expenses																	
fixed expenses	\$237	\$243	\$248	\$254	\$259	\$265	\$271	\$277	\$283	\$290	\$296	\$303	\$310	\$317	\$324	\$324	\$4,177
interest on debt	\$26	\$22	\$17	\$12	\$6	-	-	-	-	-	-	-	-	-	-	-	\$83
depreciation	\$94	\$94	\$94	\$94	\$94	\$94	\$94	\$94	-	-	-	-	-	-	-	-	\$657
total other expenses	\$357	\$358	\$359	\$359	\$359	\$359	\$365	\$277	\$283	\$290	\$296	\$303	\$310	\$317	\$324	\$324	\$4,917
Operating Income	-\$60	-\$54	-\$48	-\$42	-\$35	-\$27	-\$26	\$70	\$71	\$73	\$75	\$76	\$78	\$80	\$82	\$82	\$313
Simple cash flow																	
equity outlay	-\$329																-\$329
operating income	-\$60	-\$54	-\$48	-\$42	-\$35	-\$27	-\$26	\$70	\$71	\$73	\$75	\$76	\$78	\$80	\$82	\$82	\$313
addback depreciation	\$94	\$94	\$94	\$94	\$94	\$94	\$94	-	-	-	-	-	-	-	-	-	\$657
debt principal payments	-\$56	-\$60	-\$65	-\$71	-\$76	-	-	-	-	-	-	-	-	-	-	-	-\$329
cash flow	-\$329	-\$23	-\$21	-\$20	-\$18	-\$17	\$67	\$68	\$70	\$71	\$73	\$75	\$76	\$78	\$80	\$82	\$313
Σ cash flow	-\$329	-\$351	-\$372	-\$392	-\$410	-\$427	-\$360	-\$292	-\$222	-\$151	-\$78	-\$3	\$73	\$151	\$231	\$313	

Graphs

based on scenario selected, product matrix, and other assumptions



Scenario # selected for evaluation = 5

