Attachment 9. Description of Models

The CARE Economic Models are being developed into comprehensive planning, prediction and subsidy facilitation tools. The objectives of the CARE Economic models are geared towards enabling the CARE program administrator and planner to be pro-active in anticipating changes in macroeconomic conditions, energy markets, petrochemical input prices, and final carpet market sales and PCC discards. By having convenient access to historic economic indicators and market projections that are determinants of relative price levels for virgin fibers, Post-Industrial (PI) material prices, and post-consumer carpet (PCC) discards, the user is better equipped to formulate incentivizing subsidies. The models provide the program administrator with scenario modeling capabilities.

The models are in various stages of development and reliability and confidence varies across the models. All model projections are obviously tied to underlying assumptions as starting points which may have profound effects on the resulting projections. Assumptions are based on best available information and experience at the time a model is run.

Attachment 9A. Description of Economic Model

Economic Model

The Economic Model was built and refined by Louis Berger Company and paid for with Program funds. This is a forward-looking model. Accordingly, the information contained within the various work components or “modules” has some direct or indirect relation to markets or inputs that can potentially influence virgin material prices, PI Material prices and PCC fiber discard relative prices. Factors that change relative prices and influence supply and demands for various materials are important for CARE’s ability to set subsidy levels and to anticipate the best timing for a subsidy adjustment. The model is set up using monthly data. This data is the highest frequency available, captures seasonal patterns, and can be integrated with, and summed into CARE’s quarterly planning and other management financial cash flow models. Ultimately, the model provides a key input projection (under various market conditions), for the PI price that PCC prices compete against. The model determined PI price is one of several key inputs in the subsidy determination formula (that is linked to other variables) within the model, to be used in subsidy determination to stimulate PCC fiber recovery.

Structure

The Economic Model is divided into five work components or “modules” that relate to key aspects of proactive tracking and scenario building. For example, economic growth nationally and in California, housing activity, carpet sales by market

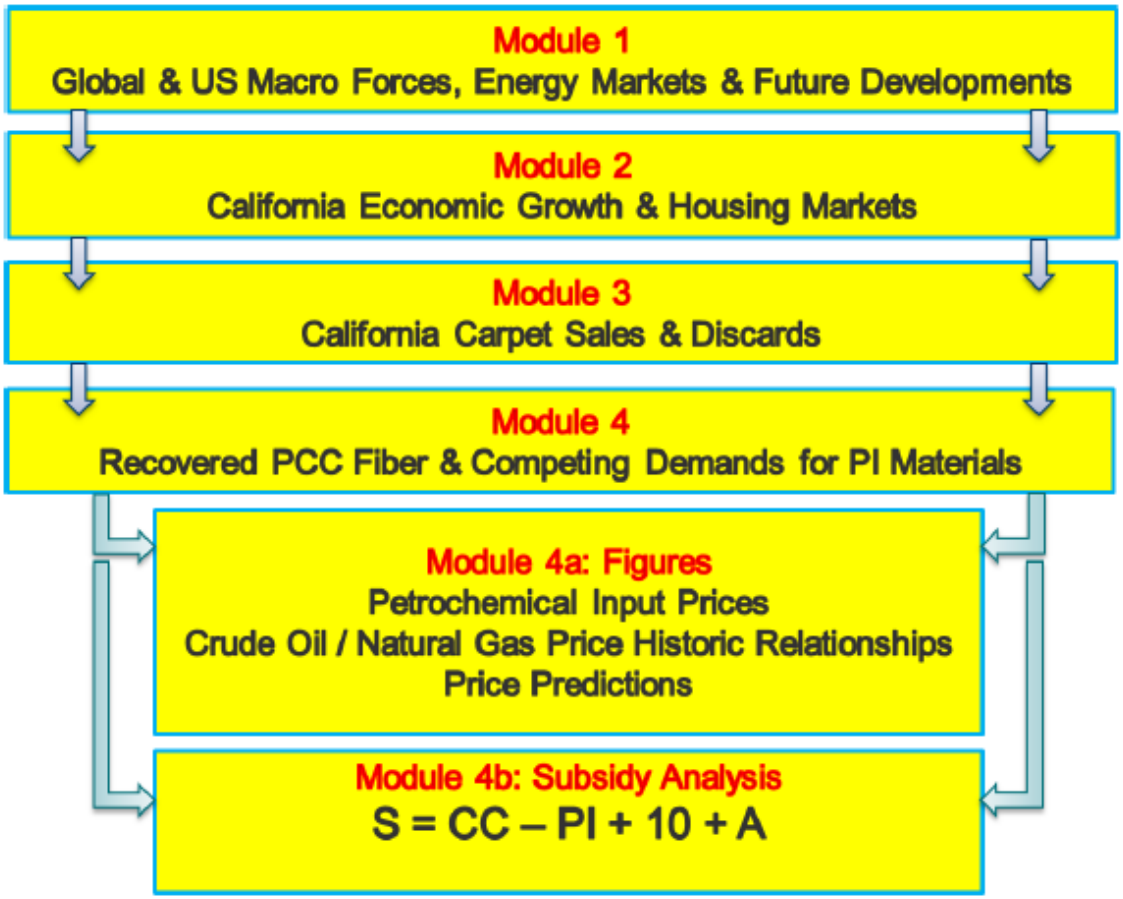
segment, and PCC discards are all represented within the modules. The Model collates information to allow the user to stay up to date on key trends and can be used to build hypothetical planning scenarios that test impacts on virgin fiber prices, and post-industrial (PI) material prices that compete with recyclable PCC prices. The model also has equations that allow the user to predict the recovered PCC fibers quantities that will be reported to CARE and to simulate recovery scenarios based on projected relative prices. This function allows the user to anticipate recovered fiber quantities likely reported to CARE based on changing market and economic conditions. The modules contained within the model offer a control point location for accessing key data and projections that CARE managers can use for tracking purposes and to anticipate factors that influence Post-Consumer Carpet (PCC) discards and quantity / recovered and reported to CARE by stakeholder members.

- **Module 1** contains data on U.S. GDP and Global Energy Markets (Supply / Demand) Key price benchmarks. The user can continually track energy price trends that determine prices for petrochemical virgin materials, and Post-Industrial Prices and PCC Recyclable Prices. With this information, the user can be quickly informed about energy prices (and outlooks) over the next several months or years and not be caught “reacting” when prices move but can anticipate such movements. In addition, the user will appreciate how high oil prices impact the economy and demand conditions for consumer goods and carpet sales based on this structure.
- **Module 2** contains data on the California economy and housing markets influencing carpet demand and sales. It provides historical and projected California GDP data, macroeconomic and housing growth indicators. The purpose of the module is to provide historic growth background and to highlight the most recent and official expectations for future California growth and construction activity, and to track housing markets on a quarterly and monthly basis.
- The objective of **Module 3** is to predict California carpet sales and discards at a quarterly aggregate level, prior to focusing on constituent fiber types, reported as recovered (Module 4 is the focus of fiber breakdowns by type). Module 3 makes use of existing data (both privately subscribed, and publicly available) to predict carpet sales and post-consumer carpet discards, in pounds, by using CARE’s formula. The advantage of Module 3 is that it incorporates actual carpet mill production histories and trends and seasonal factors on a monthly basis, to both supplement and compare with CARE’s quarterly sales and discards projections. The predictions can be incorporated or used for planning purposes for understanding seasonal patterns over a year.
- **Module 4** is the heart of the economic model and integrates price, macroeconomic data, and California industry data within a monthly format for scenario building and projection purposes. For example, it allows the user to

run different fiber price scenarios based on crude oil price forecasts. The model provides simulation abilities to forecast fiber prices, and post-consumer carpet discard quantities (pounds) reported to CARE for planning and subsidy/grant determination purposes. A series of dependent equations located within the worksheet provides the user with the ability to forecast virgin material prices, post-industrial material prices and recyclable prices for nylon 6, and nylon 66, PET, and polypropylene monthly. Module 4's user dashboard also links the projected relative prices (for virgin fibers and recyclables) to CARE recovery predictive equations that predict the pounds of recovered fibers reported from CARE members. The dashboard also has a table that splices the historically reported fibers (converted to monthly format) to the projected fiber quantities out to year-end 2017.

- **Module 4a** labeled contains price histories and historic relationships between dependent input prices and outputs across many business cycles and energy price environments. This information is also used to create some predictive equations and confidence intervals for fiber material prices, including Post-Industrial fiber prices that PCC is competing against.
- **Module 4b** is the subsidy facilitator determination worksheet. This information has a template that is linked to user provided inputs for crude oil prices that determines what the projected Post-Industrial Price (PI) will be, within the subsidy determination equation. The subsidy formula is based on starting with Conversion Cost Prices (Supplied by Industry for anonymous valued added processing technologies that can't be traced to owners) and subtracts Post-Industrial price (PI). It then adds 10 cents (e.g., an estimate of the price differential required between the post-industrial and post-consumer material price. This element is based on a long history of what is required to have post-consumer material displace post-industrial material in the marketplace). Finally, the equation adds a profit margin – "A". "A" represents a return on investment for the recycling company that incentivizes or piques their interest in engaging in recycling of carpet. In the worksheet, "A" is determined based on applying a markup to Conversion Cost (CC) units that the user can alter based on profit margin expectations per fiber.

The economic model is fully documented, and the most recent draft was updated September 8, 2017.



CARE continues work to develop a better understanding of how to use these models and is working to better integrate model outputs for all four models: Economic Model, Cost Conversion Model, Financial Model and the Subsidy Justification Model. To that end, an Integrated Modeling Task Force has been appointed.

Attachment 9B. Description of Financial Model

The **financial model** is a second-generation model incorporating a tiered subsidy approach. Developed internally by CARE and in collaboration with Aprio, this model allows for a variety of input parameters based on assumptions regarding recycled output performance and a variety of expenses including grants, salaries, education and outreach, contractor services, technical assistance, accounting and legal expenses, CalRecycle administrative fees, collection costs, etc.

Key assumptions required for the model are:

- Estimated sales on new carpet into California. This estimate may be informed by current sales trends for which the program has 7+ years of data and the economic model which attempts to forecast sales based on econometric analysis.
- Estimated recycled output pounds in each category being subsidized by the Plan. These estimated are informed by surveys, one on one dialog with recyclers, and experience gained over 15 plus years of CARE operation nationally and over 6 years of California-based experience.

CARE recognizes that the markets are generally volatile, but in recent years that volatility has increased due to a variety of factors, all of which have been elaborated in the 2016 California CARE Annual Report. However, more recently the China National Sword and larger governmental initiatives under a revised draft of GB 16487, “Environmental Protection Control Standards for Imported Wastes as Raw Materials.” These changes when integrated together are wreaking havoc with recycling commodity markets, both domestic and global. Such turmoil has been seen by CalRecycle directly in other recycling commodity markets as well as local and regional markets. In addition, growth in the supply of virgin polymers continues to put pricing pressure on recycled polymer plastics.

The model was designed to provide financial guidance on the costs associated with the program, in particular, to estimate the subsidy payments, general program and administrative expenses, and thus assessment requirements to fund Plan activities. CARE used a scenario analysis approach looking at various subsidy levels, recycled output pounds required to reach targets and different activated strategy elements. The model allows for a wide range of “what-if” scenarios to be evaluated and compared to inform decision making under this Plan. Over the last 2.5 years, CARE has run more than 70 model scenarios in an effort to find the right balance to enable a successful program.

The Excel models are far too large to incorporate into this plan in their current form. In the summary model, rows can number 60 plus, and columns extend out to 130 plus since the analysis is designed to capture details on a monthly basis for 5 years with additional analysis interspersed, including actual pounds and dollars tracking

vs. budget. In the detail (inclusive of individual recyclers) the rows can number much higher and currently are 124 while the and columns are126-plus. Thus, a snapshot of a segment of the summary model is included below as an example as Table A9-1. The snapshot is for Q4 and year-end 2019. Note, columns F and I, row 108 shows the recycled output is programmed at 24% per the new AB 1158 goal. Also note, column M, row 117 is highlighted green. This feature of the model automatically turns red if the fund balance falls below the reserve criterion. As a reminder, the reserve was increased by 100% from one month to two months under this Plan.

It is also worth reminding the reader that the financial model cash balance calculation incorporates the starting fund balance carried forward from the prior Plan starting in January 2018. Why is this important? When one examines line 103 you will note the “cost per square yard” (sq yd). This cost per sq yd is a standalone calculation that looks at the total costs for that month, inclusive of all subsidies, incentives, program and administrative costs, and divides it by the total square yards of carpet sold that month. This gives a snapshot of what the assessment per square yard would need at be for that single point in time. However, in reality there is a prior balance in the fund that carries forward and can offset the costs to fund the Program (shown as Line 117). Since the Program carried a large balance into 2018, that balance funds the expenses. Once the assessment falls below the total expenses the fund balance will begin to decline. Thus, this 5-Year Plan is fully funded at 35 cents/sqyd over the full life of the Plan. Said another way, if there was no starting balance, the assessment would be significantly higher.

The Plan is fully funded under the current set of premises used to build the budget model. Table A9-2 shows the results or the full 5-Year Plan as described in the detailed example above.

One important point, the actual detailed model shows all companies at the individual collector/sorter, processor, and manufacturer level and their expected recycled output pounds and subsidy dollars by month over the life of the Plan. This information is considered highly confidential business information by CARE and by those businesses that provided the information. Actual data and projected growth was revealed by Plan participants under the promise of confidentially. CARE takes that commitment very seriously. The Plan will speak to composite or aggregated data and uses the details to calculate those results.

CARE is happy to schedule a review meeting of the financial model for the Advisory Committee and/or CalRecycle at an appropriate time.

TABLE A9-1: Example (Scenario #5: 72-6)

A3	B	C	D	E	F	G	H	I	J	K	L	M
4	**Scenario #5: 72-6**	**October 2019**			**November 2019**			**December 2019**			**2019 Total**	
5	**Type 1 - Tier 1 Processed Fiber**											
6	**Company**	**Total Monthly Pounds**	**Total Monthly Payout**	**check**	**Total Monthly Pounds**	**Total Monthly Payout**	**check**	**Total Monthly Pounds**	**Total Monthly Payout**	**check**	**Total Annual Pounds**	**Total Annual Payout**
23	**Total Processed Fiber**	**3,590,827**	**$359,082.75**		**3,654,534**	**$365,453.36**		**3,702,440**	**$370,244.01**		**41,361,845**	**$4,136,184.48**
24	**Type 1 Commercial Broadloom Incentive Pilot**											
27	**Total Commercial Broadloom Incentive**	**244,190**	**$4,883.80**		**249,203**	**$4,984.05**		**253,013**	**$5,060.26**		**1,499,243**	**$29,984.86**
28	**Tier 1 Sifted PC4**											
38	**Total Sifted PCC CC**	**2,149,099**	**$365,346.81**		**2,182,907**	**$371,094.27**		**2,208,072**	**$375,372.20**		**24,011,909**	**$4,082,024.56**
39	**Tier 2 - Non-Nylon PET/PTT**											
53	**Total Tier 2 Non-Nylon PET/PTT**	**1,509,070**	**$362,176.82**		**1,509,070**	**$362,176.82**		**1,509,071**	**$362,177.06**		**18,108,845**	**$ 3,386,122.80**
54	**Tier 2 - Non-Nylon PP**											
60	**Total Non-Nylon PP**	**566,361**	**$135,926.52**		**566,361**	**$135,926.52**		**566,361**	**$135,926.56**		**5,811,327**	**$1,394,718.42**
61	**Tier 2 - Nylon 6 (Pilot beginning 10/01/17) + N66 (beginning 01/01/19)**											
68	**Total Tier 2 - Nylon 6 & N66**	**2,157,834**	**$215,783.37**		**2,157,834**	**$215,783.37**		**2,157,833**	**$215,783.26**		**15,240,500**	**$1,524,050.00**
69	**HR Incentive**											
71	Nylon 6	1,942,050	$97,102.52		1,942,050	$97,102.52		1,942,049	$97,102.47		13,716,450	$685,822.50
72	Nylon 66	215,783	$10,789.17		215,783	$10,789.17		215,783	$10,789.16		1,524,050	$76,202.50
73	**Total HR Incentive**	**2,157,834**	**$107,891.69**		**2,157,834**	**$107,891.69**		**2,157,833**	**$107,891.63**		**15,240,500**	**$762,025.00**
74	**CSEs Collections**											
76	**Whole Carpet Shipped/Sold**	**736,812**	**$14,736.23**		**736,812**	**$14,736.23**		**736,812**	**$14,736.23**		**8,841,740**	**$176,834.80**
77	**Processors Collections**											
79	**Whole Carpet Shipped/Sold**	**7,480,891**	**$149,617.81**		**7,613,612**	**$152,272.23**		**7,713,417**	**$154,268.34**		**86,170,510**	**$1,723,410.20**
80	**Additional Subsidies**											
82	CSE & Processor Tile Reuse	305,238	$45,786		311,503	$46,725		316,266	$47,440		**3,671,737**	**$550,761**
83	CSE & Processor Tile Recycled (.05 Pilot as of 01/01/18)											
84	CSE Reporting Incentive, Processor DePoly, Processor Filler		$25,019.21			$25,314.66			$25,535.96			**$289,291.54**
85	Transportation Subsidy											
86	**Expenses**											
87	**Category**		**Total Monthly Payout**			**Total Monthly Payout**			**Total Monthly Payout**			**Total Annual Payout**
88	CalRecycle		$89,977.09			$87,750.00			$87,750.00			$1,124,999.99
89	CARE Administration Costs		$17,333.33			$17,333.33			$17,333.33			$208,000.00
90	Direct Expenses		$78,166.67			$78,166.67			$78,166.67			$938,000.00
91	Direct Support		$72,416.67			$72,416.67			$72,416.67			$869,000.00
92	Accounting and Legal		$35,041.67			$35,041.67			$35,041.67			$420,500.00
93	Advisory Committee		$3,750.00			$3,750.00			$3,750.00			$45,000.00
94	Education and Outreach		$108,333.33			$108,333.33			$108,333.33			$1,300,000.00
95	Collections Program		$153,333.33			$153,333.33			$153,333.33			$1,840,000.00
96	Grants		$425,000.00			$425,000.00			$425,000.00			$5,100,000.00
97	Technical Assistance		$115,000.00			$115,000.00			$115,000.00			$1,380,000.00
98	**Total Monthly Expenses**		**$1,098,352.09**			**$1,096,125.00**			**$1,096,125.00**			**$13,225,499.99**
99	**PROGRAM TOTAL**											
100	**TOTAL PAYOUTS**		**$2,884,602.80**			**$2,898,483.65**			**$2,910,560.43**			**$32,240,907.22**
101												
102	**Sales**	6,864,000			6,864,000			6,864,000			**88,000,000**	
103	**Cost per sq yd**		**$0.42**			**$0.42**			**$0.42**			**$0.37**
104												
105	**Recycled Output**											
106	Pounds of Recycled Output	**6,045,164**			**6,148,944**			**6,226,778**			**69,045,491**	
107	Discards	**25,653,394**			**25,653,394**			**25,653,394**			**328,889,669**	
108	Recycled Rate	**23.6%**			**24.0%**			**24.3%**			**21.0%**	***Yearly Average***
109												
110												
111												
112	**Previous Month's Difference***		$ 9,619,517			$ 9,138,276			$ 8,643,106			$ 9,293,402
113	**Plus Assessments (@.XX per sq. yd.)****		$ 2,402,400			$ 2,402,400			$ 2,402,400			$ 30,793,377
114	**Plus Interest Income**		$ 962			$ 914			$ 864			$ 11,703
115	**<Less> Total Subsidies**		$ 1,786,251			$ 1,802,359			$ 1,814,435			$ 18,055,407
116	**<Less> Total Expenses**		$ 1,098,352			$ 1,096,125			$ 1,096,125			$ 13,225,500
117	**Accrued Fund Balance**		$ 9,138,276			$ 8,643,106			**$ 8,135,810**			**$ 8,817,574**
118												
119	**Current and previous month's payouts**								$ 5,809,044			
120	**Fund Reserve**								$ 5,795,765			$ 5,795,765
121	**Cost per sq yd to meet reserve*****								$ 0.35			

Foot notes for Tables A9-1 & 2:

*This calculation uses the fund balance as of 01/01/17 to begin calculation.
**This calculation uses the sq. yd. in cell 102, above, multiplied by the current year assessment listed on the Parameters page.
***If fund balance is greater than the reserve then this is equal to current assessment per sq. yd.

TABLE A9-2: 5-Year Summary (Scenario #5: 72-6)

A3	B	B	C	D	E	F	G	H	I
4	**Scenario #5: 72-6**	**2019 Total**		**2020 Total**		**2021 Total**		**2022 Total**	
5	**Type 1 - Tier 1 Processed Fiber**								
6	**Company**	**Total Annual Pounds**	**Total Annual Payout**	**Total Annual Pounds**	**Total Annual Payout**	**Total Annual Pounds**	**Total Annual Payout**	**Total Annual Pounds**	**Total Annual Payout**
23	**Total Processed Fiber**	**41,361,845**	**$4,136,184.48**	**49,859,945**	**$4,985,994.46**	**51,465,516**	**$5,146,551.57**	**50,712,005**	**$5,071,200.55**
24	**Type 1 Commercial Broadloom Incentive Pilot**								
27	**Total Commercial Broadloom Incentive**	**1,499,243**	**$29,984.86**	**3,884,798**	**$77,695.97**	**4,092,582**	**$81,851.63**	**3,832,304**	**$76,646.08**
28	**Tier 1 Sifted PC4**								
38	**Total Sifted PCC CC**	**24,011,909**	**$4,082,024.56**	**26,845,564**	**$4,295,290.29**	**26,716,650**	**$4,007,497.50**	**28,284,220**	**$3,959,790.77**
39	**Tier 2 - Non-Nylon PET/PTT**								
53	**Total Tier 2 Non-Nylon PET/PTT**	**18,108,845**	**$ 3,386,122.80**	**23,936,945**	**$5,505,497.35**	**24,942,516**	**$5,487,353.52**	**22,389,005**	**$4,701,691.05**
54	**Tier 2 - Non-Nylon PP**								
60	**Total Non-Nylon PP**	**5,811,327**	**$1,394,718.42**	**7,670,542**	**$1,534,108.35**	**7,821,377**	**$1,486,061.71**	**7,438,351**	**$1,338,903.14**
61	**Tier 2 - Nylon 6 (Pilot beginning 10/01/17) + N66 (beginning 01/01/19)**								
68	**Total Tier 2 - Nylon 6 & N66**	**15,240,500**	**$1,524,050.00**	**17,094,000**	**$1,709,400.00**	**17,094,000**	**$1,709,400.00**	**17,094,000**	**$1,709,400.00**
69	**HR Incentive**								
71	Nylon 6	13,716,450	$685,822.50	15,384,600	$770,525.00	15,384,600	$769,230.00	15,384,600	$769,877.50
72	Nylon 66	1,524,050	$76,202.50	1,709,400	$84,175.00	1,709,400	$85,470.00	1,709,400	$84,822.50
73	**Total HR Incentive**	**15,240,500**	**$762,025.00**	**17,094,000**	**$854,700.00**	**17,094,000**	**$854,700.00**	**17,094,000**	**$854,700.00**
74	**CSEs Collections**								
76	**Whole Carpet Shipped/Sold**	**8,841,740**	**$176,834.80**	**8,841,740**	**$176,834.80**	**8,841,740**	**$176,834.80**	**8,841,740**	**$176,834.80**
77	**Processors Collections**								
79	**Whole Carpet Shipped/Sold**	**86,170,510**	**$1,723,410.20**	**103,874,885**	**$2,077,497.69**	**107,219,824**	**$2,144,396.49**	**105,650,011**	**$2,113,000.23**
80	**Additional Subsidies**								
82	CSE & Processor Tile Reuse	**3,671,737**	**$550,761**	**4,504,061**	**$675,609.09**	**5,115,726**	**$767,358.97**	**4,790,382**	**$718,557.26**
83	CSE & Processor Tile Recycled (.05 Pilot as of 01/01/18)								
84	CSE Reporting Incentive, Processor DePoly, Processor Filler		**$289,291.54**		**$340,822.29**		**$339,252.68**		**$320,450.35**
85	Transportation Subsidy								
86	**Expenses**								
87	**Category**		**Total Annual Payout**		**Total Annual Payout**		**Total Annual Payout**		**Total Annual Payout**
88	CalRecycle		$1,124,999.99		$1,539,668.86		$1,522,172.62		$1,504,676.39
89	CARE Administration Costs		$208,000.00		$198,000.00		$198,000.00		$198,000.00
90	Direct Expenses		$938,000.00		$957,000.00		$986,000.00		$999,000.00
91	Direct Support		$869,000.00		$882,300.00		$696,166.00		$712,416.00
92	Accounting and Legal		$420,500.00		$436,315.00		$447,454.45		$463,928.08
93	Advisory Committee		$45,000.00		$35,000.00		$35,000.00		$35,000.00
94	Education and Outreach		$1,300,000.00		$1,200,000.00		$1,200,000.00		$1,200,000.00
95	Collections Program		$1,840,000.00		$1,840,000.00		$1,840,000.00		$1,840,000.00
96	Grants		$5,100,000.00		$3,100,000.00		$1,100,000.00		$1,100,000.00
97	Technical Assistance		$1,380,000.00		$660,000.00		$610,000.00		$610,000.00
98	**Total Monthly Expenses**		**$13,225,499.99**		**$10,848,283.86**		**$8,634,793.07**		**$8,663,020.47**
99	**PROGRAM TOTAL**								
100	**TOTAL PAYOUTS**		**$32,240,907.22**		**$33,081,734.16**		**$30,836,051.93**		**$29,704,194.69**
101									
102	**Sales**	**88,000,000**		**87,000,000**		**86,000,000**		**85,000,000**	
103	**Cost per sq yd**		**$0.37**		**$0.38**		**$0.36**		**$0.35**
104									
105	**Recycled Output**								
106	Pounds of Recycled Output	**69,045,491**		**81,209,570**		**83,297,892**		**83,786,607**	
107	Discards	**328,889,669**		**325,152,286**		**321,414,904**		**317,677,521**	
108	Recycled Rate	**21.0%**	***Yearly Average***	**25.0%**	***Yearly Average***	**25.9%**	***Yearly Average***	**26.4%**	***Yearly Average***
109									
110									
111									
112	**Previous Month's Difference***		$ 9,293,402		$ 8,817,574		$ 6,187,699		$ 5,451,394
113	**Plus Assessments (@.XX per sq. yd.)****		$ 30,793,377		$ 30,443,452		$ 30,093,528		$ 29,743,603
114	**Plus Interest Income**		$ 11,703		$ 8,407		$ 6,218		$ 5,781
115	**<Less> Total Subsidies**		$ 18,055,407		$ 22,233,450		$ 22,201,259		$ 21,041,174
116	**<Less> Total Expenses**		$ 13,225,500		$ 10,848,284		$ 8,634,793		$ 8,663,020
117	**Accrued Fund Balance**		**$ 8,817,574**		**$ 6,187,699**		**$ 5,451,394**		**$ 5,496,583**
118									
119	**Current and previous month's payouts**								
120	**Fund Reserve**		$ 5,795,765		$ 5,430,853		$ 5,006,123		$ 4,829,416
121	**Cost per sq yd to meet reserve*****								

Attachment 9C. Description of Conversion Cost Model

Introduction

The **conversion cost model** (CCM) has been developed by Frank Endrenyi in collaboration with CARE and was funded by CARE. This brand-new model looks at the full details for a carpet recycling operation and allows great flexibility in inputs to generate true operational costs and profitability profiles for any operation. By examining a variety of existing and theoretical businesses using this tool, CARE can better understand and quantify the level of subsidy which may be necessary to ensure a viable business model and/or account for the activation cost for businesses to enter into new operational approaches. The CCM is adaptable and customizable and will work with or without subsidies. The CCM can be used to analyze existing business models or evaluate profitability of proposed business models. Activation costs refer to the incentive necessary for a business to switch to a new raw materials source, in this case PCC.

As an example, recent developments regarding the new N6 Tier 2 subsidy have recently been implemented. The economic model, in conjunction with the conversion cost model is currently at a stage where we have an initial degree of confidence that it can be refined and used to conduct what-if scenarios on price movement and differentials for virgin versus post-industrial versus recycled PCC polymers and materials. The conversion cost model along with dialog with recyclers, is how CARE arrived at the new 10 cents/lb. Tier 2 Nylon 6 subsidy.

The following table is an example of the CCM with example inputs and outputs. All cells in green are input cells which demonstrates the flexibility for adaptation to a wide variety of operational inputs.

The CCM includes the following components:

1. Input-Summary
    - All inputs
2. Process Calculations
    - Sales of all components
    - Raw materials costs
    - Input carpet volume
    - Output volume
    - Rebates (subsidies)
    - Packaging costs
3. Expenses
    - Facilities
    - Utilities
    - Repairs & maintenance, parts, etc.
    - Office and other expenses

4. Wages
    - All direct and indirect labor
5. Financials
    - Financial line items including profit or loss

	A	B	C	D	E	F	G	H	I	J	L	R
1	Carpet Weight Constituent Yields								Facilities		Material Balances	Yearly Pounds
2	Face Wt.	24.00	26.00	28.00	30.00	32.00	34.00	36.00	Building Sq. Ft.	100000		
3	Tot. Wt.	57.00	59.00	61.00	63.00	65.00	67.00	69.00	Cost/Sq. Ft./Month	$0.65	Net Face Fiber (For Sale)	11,506,983
4	Gr. Face %	42.1%	44.1%	45.9%	47.6%	49.2%	50.7%	52.2%			Net PP Backing Fiber (for Sale)	3,098,034
5	Gr. PP %	12.28%	11.86%	11.48%	11.11%	10.77%	10.45%	10.14%	Utilities		Toal Fiber Losses	2,577,356
6	Net Face %	35.79%	37.46%	39.02%	40.48%	41.85%	43.13%	44.35%	Process H.P.	2500	Net Sellable Calcium	13,537,627
7	Net PP %	10.44%	10.08%	9.75%	9.44%	9.15%	8.88%	8.62%	Ave. Power Cost/KWH	$0.18	Total Fibers (For Sale)	12,027,661
8	Tot. Losses	8.16%	8.39%	8.61%	8.81%	9.00%	9.18%	9.35%	Water Rate/H. Cu. Ft.	$4.00	Total Carpet Materials Processed	25,565,288
9	Calc. %.	45.61%	44.07%	42.62%	41.27%	40.00%	38.81%	37.68%	Meter Charge/Month	$4,000.00	Unusable Carpet	1,278,264
10	Carpet Face Weight				26				Water Cost/Lb. of water	$0.000640	Total Carpet Purchased	26,843,553
11	Fiber Process loses (Face and PP Back)				15%				Replacement Water	20%		
12	Unusable PC Carpet Purchased				2%				Water Used (lb./Day)	11,684.01	COGS	Cost/Year
13									Cost of Water/Month	$4,155.89	Cost of carpet purchased	$1,342,178
14	Landfill Cost				$0.040				Chemicals ($/mth.)			
15									Other		Sales Revenues	Sales Per year
16	Whole Carpet In (lb./hr.)				6400				Other		Net Face Revenue	$4,832,933
17	Face Fibers Out (lb./hr.)				1918						Net PP Backing Revenue	$371,764
18									Direct Plant Wage Costs	Rate/hr.	Face fiber losses	$0
19	Input Carpet Face Fiber Type				Cost/lb.		Ratio Processed		Supervisor	$18.00	Gross Revenue	$5,204,697
20	Nylon 66				$0.050		0.0%		Maintenaince	$17.00	Unusable Carpet Landfill Cost	$51,131
21	PET				$0.040		0.0%		Person 1	$13.00	Unsold Calcium Landfill Cost	$541,505
22	Nylon 6				$0.050		100.0%		Person 2	$12.00	Net Sales Revenue	$4,612,061
23	PP				$0.040		0.0%		Person 3	$12.00		
24	Blended Cost (Ratio must = 100%)				$0.05		100.0%		Person 4	$12.00		
25									Person 5	$12.00	Rebates	Rebate Per Year
26	Face Revenue per Lb.				Gr. Sell		Shipping	Net Rev.	Person 6	$12.00		
27	Nylon 66				$0.730		$0.080	$0.65	Person 8	$0.00	Processor Face Fiber Rebate	$1,150,698
28	PET				$0.150		$0.080	$0.07	Person 9	$0.00	Processor PP Backing Rebate	$309,803
29	Nylon 6				$0.500		$0.080	$0.42	Person 10	$0.00	Net Calcium Rebate	$0
30	PP				$0.220		$0.080	$0.14	Person 11	$0.00	End User PP Backing Rebate	$774,508
31	Blended Gross Revenue				$0.50						End User PET Rebate	$0
32	Blended Net Revenue							$0.42	Payroll tax and benefits		End User Nylon 6 Rebate	$1,150,698
33									Payroll Tax %	15%	Total Rebate Revenue	$3,385,708
34	Schedule (Days/Wk.)				5				Benefit %	10%	Sales	$4,612,061
35	Schedule (Days/Mth.)				20.833				Other		Rebate	$3,385,708
36	Up time %				80%						Total Sales	$7,997,770
37	Shifts/Day				3				Packaging Costs			
38									Nylon Pellet lb/box	1750	Labor Costs	$1,053,518
39	Backing Components Revenue				Gr. Rev.	Shipping	End-User	Net Rev.	PET Pellet lb/box	2000		
40	PP Back				$0.200	$0.080	$0.000	$0.12	PP Pellet lb/box	1350	Packaging Costs	
41	Calcium				$0.170	$0.000	$0.000	$0.17	Box Cost	$23.00	Face Pellets	$236,715
42									Liner Cost	$2.00	PP Backing Pellets	$82,614
43	% Calcium Unsold				100%				Pallet Cost	$11.00		
44												
45	Rebates				Amount				Cap. Ex.	$5,000,000		
46	Processor N6 & N66 Face				$0.100				Loans/Month			
47	Processor PP Back				$0.100				Interest/Month			
48	Processor Calcium				$0.170				Fees			
49	End User PP Back				$0.250				Other		Gross Profit	$6,655,592
50	End User PET				$0.250				Other		Net profit	$1,266,608
51	End User Nylon 6				$0.100						EBITDA	$1,980,894

Summary

The new models are tools meant to enhance CARE's ability to meet the goals of this Plan, better understand and quantify the potential cost relationships between individual incentive allocations and pounds of material flows, and to be more responsive to the changes that occur in the marketplace. These models are complex and require a deep understanding to use appropriately. As such the models are not open to distribution, but CARE will, upon request, provide a detailed review for CalRecycle and the Advisory Committee as required by AB 1158.

Because the models were developed in 2017, and the Conversion Cost Model in the second half of 2017, there is not yet sufficient data available to put forth in this Plan. However, throughout the life of the Plan, CARE will integrate the complementary outputs to guide decision-making and make adjustments to all three models as needed. To that end, CARE has formed an Integrated Modeling Task Force to work on the further refinement, integration, and use of these tools. The data compiled over the life of the Plan will be made available to CalRecycle and the Advisory Committee as required by AB 1158.