



June 30, 2012

State of California  
Department of Resource Recycling and Recovery  
1001 I Street  
P.O Box 4025  
Sacramento, CA 95812-4025

Via email to [75%recycling.comments@calrecycle.ca.gov](mailto:75%recycling.comments@calrecycle.ca.gov).

**SUBJECT: Comments to CalRecycle's First Draft Plan for AB 341 Implementation**

We are pleased to submit our comments to the California Department of Resource Recycling and Recovery's (CalRecycle) draft implementation plan for AB 341, "California's New Goal: 75% Recycling." Our comments follow the Department's numbered outline format as requested, as text rather than as fill-in on the questionnaire.

Public Resources Code Chapter 476, Statutes of 2011 (Chesbro) (AB 341) identified a list of very specific questions that the CalRecycle report to the Legislature needed to answer. The first requirement for this report is to outline the strategies by which California will seek to fulfill the policy goal that not less than 75 percent of solid waste generated be source reduced, recycled, or composted by 2020. The next six report sections (seven, counting the "catch-all") are much more specific, and need to be addressed directly.

We believe AB 341 and the legislated report CalRecycle must now submit are designed to focus upon the entire recycling process in order to dramatically improve the functional infrastructure efficiency of what the law had already defined as Recycling. CalRecycle's draft plan strays far from the law's considerations as the Department seeks "strategies" by which to reach the 75% goal, and at the same time opens discussions addressed in other parallel areas of the law outside of the dictum of AB 341 entirely.

Throughout our comments we have provided not a new idea but a re-reading of existing code by emphasizing that by law, recycling is a process, a progression of activities that culminate in a particular goal: to prepare "recyclable materials" for reentry into the marketplace:

"California Public Resources Code §40180: "Recycle" or "recycling" means the process of collecting, sorting, cleansing, treating, and reconstituting materials that would otherwise become solid waste, and returning them to the economic mainstream in the form of raw material for new, reused, or reconstituted products which meet the quality standards necessary to be used in the marketplace. "Recycling" does not include transformation, as defined in Section 40201."

The draft CalRecycle report presents an abbreviated interpretation of Recycling focused primarily on the "front end" on segregation, collection and sorting, an interpretation that unfortunately is in common usage. When measured against the legal definition, this foreshortened concept of Recycling perpetrates a dysfunctional view of the infrastructure and distracts our attention from the lack of clean, local, efficient means to convert the collected materials into marketable commodities.

California recyclers all too often broker the collected recyclable materials to remanufacturing operations at great distances from the source of waste generation. Whenever we outsource the last steps in the process without chain of custody documentation, we remove our ability to assess the complete Recycling infrastructure pathway. With transport related impacts, we arguably defeat whatever societal and environmental gains we might have made by recovering those resources and diverting them from disposal. We give away the economic benefits of the jobs and state tax revenue that this part of the infrastructure could create.

Despite our good intentions and social consciousness, without data, we cannot factually support comparisons of one method to another nor argue that this pattern is less damaging environmentally than even direct disposal in California's state-of-the-art landfills. Without baseline data for existing total recycling pathways, CalRecycle cannot determine if its actions to increase recycling result in reduced greenhouse gas impacts. Without a means to document current conditions there is no basis for measurement of progress in the future, to validate compliance with the new law's underlying intent as a measure of the Scoping Plan developed by the Air Resources Board to comply with the Global Warming Solutions Act of 2006 (AB 32).

Without a comprehensive knowledge of what total recycling is, without a data-supported baseline to build upon as a way to document and direct progress, CalRecycle cannot effectively focus on missing elements and will not know whether it reaches the AB 341 goal or not.

Please contact me at (530) 613-1712 or [mtheroux@jdmt.net](mailto:mtheroux@jdmt.net) if you have any questions.

Sincerely,

**JDMT, Inc**



Michael Theroux  
Vice President

enc

## **JDMT, Inc Comments to "California's New Goal: 75% Recycling" First Draft**

### **Introduction: Thoughts from the Director**

CalRecycle Director Carroll Mortensen has provided a thoughtful introduction to the state's draft AB 341 implementation plan, emphasizing the agency's intent to accept the bill's "invitation to design the future."

We fully support the spirit of this intent. We applaud the department's foresight and hard work in generating this Plan as a first step in implementing the new legislative policy that not less than 75% of the solid waste generated be source-reduced, recycled, or composted by 2020.

In our own assessment of California's resource recovery, we have identified one overarching issue that stands as a stumbling block, albeit a *surmountable* barrier, to achieving this worthy goal. California has no system in place to ensure that "recyclable materials" separated from the waste stream are actually reconstituted into market ready raw materials in an environmentally sound manner that socio-economically benefits our state. We believe it is time to implement true and total recycling according to Public Resources Code (PRC) 40180:

Recycling = Collect > Sort > Clean > Treat > Reconstitute > Raw Material for Marketplace

Just as attainment of the goals set by AB 341 requires adherence to what is legally defined as recycling, the law also defines its intended extent of programmatic change. The process of recycling extends *only* to the point where recycled materials are reprocessed and made ready for the marketplace, and does not include post-entry market management. AB 341 implementation requires close coordination with many programs, but there is no encoded mandate for market development. Policy Goal attainment actions must remain within the context of the definition of recycling.

A process of identification of existing pathways, assessment of associated impacts, encouraged best management practices, and targets strengthening and broadening the total recycling infrastructure provides the core of AB 341 implementation.

### **The Numbers! What Does 75% Recycling Mean?**

Businesses have no way of knowing whether or not the recyclable goods they segregate from their waste stream will actually result in a return of materials to the marketplace. At least when the remaining fraction of the company's waste is released to a franchised solid waste hauling company there is a level of accountability that reduces the company's liability. Solid waste released to hauler becomes the hauling company's property, and the transfer of ownership of that waste also transfers the liability for proper management. There is no analogous transfer when commercial waste generators "arrange for recycling services."

Segregation and transfer of a recyclable material alone does not constitute recycling, per law and CalRecycle's own Glossary definition:

"Recycling: Per Public Resources Code section 40180, the process of collecting, sorting, cleansing, treating, and reconstituting materials that would otherwise become solid

waste, and returning them to the economic mainstream in the form of raw material for new, reused, or reconstituted products that meet the quality standards necessary to be used in the marketplace."

A material continues to be classified as waste and cannot be considered "recycled" until is ready to re-enter the marketplace. California lacks any means to determine whether or to what degree separated materials actually are "recycled", or are just sent elsewhere (often well beyond its jurisdiction) for less-than-desirable processing or disposal. The assumption of recycling without documentation of beginning-to-end processing from collection to raw material is simply not sufficient. Tracking the path of the material is implicit in recycling's definition. With no proof that total recycling has occurred, no credit should be allowed.

Total Recycling = Collect > Sort > Clean > Treat > Reconstitute > Raw Material for Marketplace

A holistic approach to Total Recycling is critical, inclusive of waste generation, segregation, transfer, and whatever mechanism is employed to "alter the form" and manufacture a new object. "Commercial Recycling" must be interpreted as the entire chain from separation of recyclable materials out of the commercial waste stream, to the end-point reforming of that recovered raw resource into some commodity ready for market reentry as a new product.

Clear criteria need to be established and followed: (1) Does the removal of the material from the waste stream result in actual diversion from disposal and return as raw material ready for the marketplace? and (2) Does an assessment of impacts throughout the pathway constitute both a Best Management Practice, and an improvement over disposal? To the measurable, validated degree that both conditions are met, the pathway is a method of waste management constituting Total Recycling, and counts as diversion.

Previous law defines "recycling" and AB 341 now mandates that a business "recycle" without any way of providing a manifested tracking mechanism that accomplishes liability transfer and risk reduction. A commercial waste generator cannot comply with the AB 341 mandate to recycle unless it or the recycling service it uses can fully document the actual progress of segregated recyclable goods through the pathway to the point of readiness for market reentry.

AB 341 implementation should begin with a statewide assessment of existing "recycling services" to identify Best Management Practices, and certify as acceptable only those that can document valid pathways that end with reprocessing of recyclable goods in readiness for market reentry. While certification programs for recyclers, centers, and processors are already in place, the focus is on collection and program payments, without regard for chain-of-custody throughout the total recycling pathway. This requirement should be added to the existing certification program. Those that can produce acceptable chain-of-custody documentation will qualify as certified recyclers, and their services can be made available to all, including Commercial Waste Generators.

### **Policy Drivers**

We would call particular attention to the following three policy drivers:

*Greenhouse Gas (GHG) emissions and Climate Change* - An approach that ties Recycling accreditation to overall environmental quality control is similar to methods being developed by the Air Resources Board for determination of Low Carbon Fuel Standard "Carbon Index" (CI) value. Indeed, accounting for Greenhouse Gas creation needs to be implemented for the entire

process of Recycling, given the current practices of long-distance transport and attendant emissions.

*Reduced Reliance on Petroleum* - Beyond reduction in GHG associated with recycling transport is the potential to incent pathways that result in alternative fuel manufacturing and or usage. Any segregation of waste that ultimately returns to the marketplace as an alternative to crude-oil sourced fuel should be promoted and supported, recognizing the value of converting the deep liability of a "waste" into the strong benefit of alternative fuels. Total recycling pathways that generate alternative fuels should be given precedence over return-to-market strategies focused on making new one-use bottles and bags, as an example.

*Resource Recovery* - Not all "resources" are equally available, nor do they entail the same amount of effort or impact to acquire. National mandates address recovery of such elements as titanium, platinum, and much less common yet critical metals and halides. Minute amounts of rare and precious metals pass completely through our current waste management infrastructure to an end-point of disposal, or to exit our local and national marketplace entirely. Assessment is needed to prioritize and incent the level of effort appropriate for "directed recycling" for recovery of nationally critical resources, beyond what can be left to the common marketplace.

## **1. Increase Recycling Infrastructure**

### **1a. Funding and Infrastructure**

This section of the draft is well stated, and follows the encoded directive closely.

The Legislative Intent stated in AB 341 became encoded as Public Resources Code 42649(c):

"It is the intent of the Legislature to reduce greenhouse gas emissions by diverting commercial solid waste to recycling efforts and to expand the opportunity for additional recycling services and recycling manufacturing facilities in California."

Increased infrastructure should seek to connect supply to demand by developing and maintaining a database of active pathways, incenting where difficult materials need special management and where crucial national resource recovery should take precedence. CalRecycle already maintains a mechanism to identify excesses and shortages that occur along the Recycling pathway, through the nascent and under-utilized California Materials Exchange Program<sup>1</sup>. Disincentives should be levied against current and proposed pathways that cannot be validated by pathway accounting, but provide room for high-impact Total Recycling methods that can still result in less overall impact than other alternatives available. Beyond this, CalRecycle should work to construct an evenly balanced portfolio of methods that can develop in-state jobs while maintaining environmental standards.

### **1b. Regulatory Oversight**

*Sustainable Infrastructures and Sites* - An assessment is needed to identify and correct policy and regulatory imbalances between industrial processing methods that could close the Recycling loop. CalRecycle must resolve cross-agency "turf wars" and continue to "level the field." When new Total Recycling elements are proposed, the state should seek to rapidly develop piloting programs and third party validation, such that new pathways can be certified for Recycling accreditation following the Air Resources Board's regulatory program example of validation of low carbon fuel pathways. It should be the agency's intent to continually add to that

---

<sup>1</sup> PRC §40507 and §42660.

list of validated pathways, just as this is being accomplished for Low Carbon Fuel production pathways.

*Training and Certification* - There is the need to instill an awareness of Total Recycling as a crucial element of integrated waste management in permitting and enforcement. AB 341 creates the programmatic mandate to extend Local Enforcement Agency (LEA) activities into commercial waste generation, which as stated here depends upon use of validated recycling pathways. An analogous federal program has long been in place for assessment and guidance related to energy efficiency, in the form of the Department of Energy's Industrial Assessment Centers. Indeed, the IAC program includes aspects focused on on-site waste reduction and by-product utilization for increased efficiency and overall cost reduction, and this goal is specifically referenced in AB 341.

### **1c. Strategic Facilitation and Incentivizing of Facility Siting**

Given a priori consideration that we need to define and validate pathways for Total Recycling, this section is well stated.

### **1d. Modify RMDZ Program to be State-wide**

Once a holistic series of Total Recycling pathways are defined and validated in an open-ended program intent on broadening overall Recycling, the "front end" elements of the Recycling Market Development Zone (RMDZ) program can become far more effective. Industrial jobs creation and economic development opportunities exist where excess recyclable materials can be aggregated yet find no localized mechanism for cleansing, treating, and reconstituting<sup>2</sup> to raw material ready for market. Note especially the immediate opportunities to engage the RMDZ program with hands-on commercial waste generator assessments visa vie the IAC program template, combined with focused new-process assessment training.

### **1e. Increase Recycling Manufacturing Business Assistance**

The draft refers to "Recycling Manufacturing" as industrial processes that can cleanly implement the final stages of remaking materials segregated from the waste stream, into raw materials ready for the marketplace. The tools must fit the job, and the diversity of California's waste stream demands a diverse selection of clean, permitted industrial technologies.

### **1f. Increase Collection Efficiency / Quality**

CalRecycle must focus on what the department does have the purview to accomplish, rather than assuming all issues are to be left to local jurisdictional "franchise" management. Example: There should be policies and regulations put in place to compare pathway routings to document Total Recycling best management practices, including validation of adherence to California's GHG / Climate Change mandates.

Food Waste: CalRecycle should research international programs to learn best management practices for collection of rapidly-putrescible materials. Examples of lessons to be learned: encourage use of degradable, renewable cleaning goods for food waste collection and transport containers; utilize demographics data to establish statistically accurate large sub-sample (10,000 source) pilot collection schemes; consider distributed pre-processing for stabilization of the feedstock at or near its source.

---

<sup>2</sup> PRC §40810, "Recycling" defined.

### **1g. Streamline Planning Documents**

CalRecycle can focus on increasing staff expertise for comparison of Total Recycling pathways. The state should consider development of a Programmatic EIR to define and standardize Total Recycling, in a manner that can identify "grand-fathered" pathways and spotlight lack of pathways that result in stranded resources. Follow regulatory and policy development pattern established by Air Resources Board for Low Carbon Fuel Standard for assessment of Total Recycling pathways, and develop coordinated cross-agency platform addressing transport issues associated with long distance shipment to end-path processing facilities.

### **1h. Communications Outreach on Infrastructure**

CalRecycle has the opportunity to broaden its existing Solid Waste Information System (SWIS) database to incorporate non-disposal facilities that act as re-processing plants for recycled materials manufacturing. This well-accepted system could be expanded toward a broad and inclusive categorization of Total Recycling facilities.

CalRecycle is mandated to assist cities and counties in developing and funding alternative methods of source reduction, recycling and composting<sup>3</sup> at the local level and in so doing, help local jurisdictions to complete and keep in compliance their requisite integrated waste management plans. This places the state in the position of data gathering and presentation of analyses pertinent to the local level recycling infrastructure to the specific localized total recycling pathways.

CalRecycle should seek public and private input to establish a baseline of California's capacity to manage its own recyclable materials. Increase the dialogue leading to identification of areas lacking adequate capacity for Total Recycling pathways, especially where specific waste types require costly and/or high-impact management yet lack collection, transport, processing and/or re-manufacturing mechanisms.

### **1i. What Did We Miss?**

Refocus upon California's standing legal definition of "Recycling", and re-assess entire infrastructure (or lack of infrastructure) in terms of the pathways necessary to accomplish Total Recycling.

## **2. Organics**

### **2a. Greenwaste ADC**

Not all "green waste" is created equal; most material is acceptable for compost, much is not. As CalRecycle is already aware, residual pesticides pose a significant problem of carry-through and microbial kill for composting where this low level of contamination does not jeopardize thermal processing nor is it problematic in a Class III landfill. Prior to closing what may be a less-than-optimal pathway, make sure appropriate environmentally and socio-economically sound alternatives exist.

In some cases, application of greenwaste has been proven to reduce landfill gas emissions essentially by creation of a "biofilter"; greenwaste alternative daily cover (ADC) also is an effective deterrent to pests and vectors. Ensure that other cost-effective alternative materials are available to jurisdictions relying on greenwaste ADC for these benefits.

---

<sup>3</sup> PRC §40506

## **2b. Organics Disposal Phase-Out**

Reduction in landfill disposal of organic wastes and residues by Total Recycling constitutes one of the most attractive resource recovery opportunities. Localized processing capabilities need to be encouraged that capitalize on reduced transport-related GHG while increasing local access to renewable electricity, district heating, biofuels and green chemicals.

Pressures from the Air Resources Board toward totally enclosed, negative-air composting facilities has pointed out that current management of organic waste is not without its own associated impacts.

The second statement in this subsection's Description is short-sighted, that "the 75% goal cannot be reached unless a significant amount of organics now being landfilled is instead used in new composting / AD facilities." A great variety of processing methods are now available for clean conversion of organics to beneficial use and new products, beyond "new composting / AD facilities." Integrated chemical, kinetic, microbial and thermal processing capabilities need to be assessed and compared in terms of costs and benefits, without a predisposition to one pathway or another.

## **2c. Funding for Organics Infrastructure**

The state's implementation plan should reinforce that recycling must include a diverse suite of total processing pathways, and dismiss the concept that an Organics Infrastructure *must* rely on "composting and AD". Instilling a goal of diversifying pathways will of necessity highlight opportunities for investment in the state's organics management infrastructure.

CalRecycle needs to monetize the direct benefits of (a) AD-residual soils amendment and fertilizer value, (b) optimal use of thermal energy for localized heating and cooling, (c) conversion to biofuels for localized fleet and other transport fueling alternatives, and (d) Total Recycling pathways that result in reduced transport and petroleum related GHG / Carbon Intensity as off-sets.

CalRecycle could work with California Pollution Control Financing Authority and others to establish a "Green Bank" program providing low- and no-interest loans for community scale organics conversion projects.

## **2d. Indirect Incentives**

Identify industrial opportunities for on-site organics conversion, as these most often can contribute the baseline long-term feedstock supply prompting community and regional scale organics conversion facility development. Marketing California's industrial waste organics supply as an opportunity that is accompanied by aggressive support for new processing capacity via public/private partnerships, California can attract outside private and institutional funding that creates new jobs. Leverage such development with similarly aggressive requests for federal and international funding.

## **2e. Regulatory Changes re: ADC, Food, etc.**

CalRecycle needs to clarify that California law and regulation define "recycling" as a total pathway for recovering recyclable materials from the waste stream, transporting as necessary, cleaning, treating, and reconstituting into market-ready raw materials.

Recognize that Total Recycling requires back-end processing capacity, that diverse wastes require diverse processing capabilities and that regulatory changes need to promote clean conversion.



During the development and discussion of this report, Governor Brown's office's has expressed support for legislative clean-up regarding implementation of a feedstock-driven, technology neutral approach to the tools necessary for conversion of waste into market-ready commodities. To determine where scientific inaccuracies lie in existing code that would preempt this technology neutral approach, CalRecycle should lead the reassessment of PRC 40201, and revisit "transformation", "pyrolysis", "distillation", and "biological conversion" definitions and constraints in law. Approach analysis of what should and should not be promoted from a scientific standpoint based on comparative assessment.

Incorporate waste conversion systems regulatory control as an element of Total Recycling oversight. Base the regulatory approach on the Air Resources Board's establishment of Pathways for low carbon fuels. Establish validation mechanisms for LCA-based performance standards.

## **2f. Cross-Agency Regulatory Issues**

Continue to address and disentangle cross-jurisdictional regulatory overlap of organics, especially where optimal collection, pre-treatment, conversion processing and manufacturing opportunities exist. Examples: (a) California Department of Food and Agricultural controls over disposition of waste meats, (b) State Water Resource Control Board oversight of wastewater treatment plant digestion of food waste, and other co-digestion options, (c) Support for multi-fuel approaches to organics conversion centers that can aid biomass utilization for conversion of sustainably extracted forest sourced biomass. Consolidated permitting is an excellent approach.

## **2g. Biomethane Pipeline Issues**

Expand definitions to include injection of to-specification synthesis gas into pipeline to monetize benefits of augmenting petroleum fuel supply infrastructures with waste-sourced fuel gases, whether petroleum-based or renewable.

Regulate the transfer of biomethane via pipeline the same as wheeling electricity. Recognize in the regulations that on a molecular basis there is no difference in the base gas, methane, only in our ability to meet specifications regarding contaminants, pressures and delivery rates.

## **2h. What Did We Miss?**

Improving the regulatory oversight for Organics management is concurrently being explored during CalRecycle assessment of Title 14 and Title 27 standing regulations; the two efforts should be coordinated. Management of organics must include aspects of odor, vector, and fire. Regulatory oversight of processing to mulch vs. compost is needed.

A statewide survey of infrequent yet large-volume disposal necessities should be undertaken. As an example, special provisions are needed in the regulations for management of large numbers of animal carcasses, as this is periodically a problem left to landfill management when animal transport accidents and/or disease-related death occurs. Knowing well in advance that such occurrence will repeat, alternative recovery rather than disposal protocols may be identifiable.

Cross-jurisdictional issues arise from exclusions of agriculturally-sourced organic residues, including those arising from forest restoration and timber harvest activities; this confusion is a barrier when seeking multi-process, multi-feedstock integration for biorefineries. As a result of

recent sweeping changes to the federal Forest Planning Rule<sup>4</sup>, timing is appropriate for CalRecycle to increase its role in this discussion.

### **3. Increase Commercial Recycling**

Again, comments are predicated upon an understanding that "commercial recycling" must include a full cycle of the processing pathway, rather than simply the segregation of recyclable goods from the commercial waste stream.

An error in concept is prevalent in the draft and is repeated in this section: to "document recycling" should NOT be understood as simply the act of accounting for the amount of material released to a recycling service, which is nothing more than documenting collection.

Commercial waste generators are directed to "arrange for recycling services." State law refines this language:

"Authorized recycling agent" means a person that a local governing body or private commercial entity authorizes or contracts with to collect its recyclable waste material. An authorized recycling agency may be a municipal collection service, private refuse hauler, private recycling enterprise, or private nonprofit corporation or association."<sup>5</sup>

Authorization of recycling agents does not, however, currently require that the agent document specifically to whom and at what final percentage segregated recyclable materials are actually "cleaned, treated and reconfigured" to a market-ready condition. Releasing materials to an authorized recycling agent proves collection, but does not constitute proof of Total Recycling under law.

#### **3a. Reduce Thresholds for Commercial Recycling**

Identify, document, and make public an increasing number of validated pathways that commercial waste generators may rely upon for Total Recycling. Assist with feasibility assessments for commercial waste generator usage of established and validated pathways.

Provide incentives for commercial initiatives under Corporate Sustainability programs and/or industry associations that show continual improvement toward zero waste generation including use of state-certified Total Recycling services.

Utilize and bolster the power of "green branding" to emphasize the value of commercial enterprises, including multi-family residential housing complex owners who can show initiative and develop novel programs that effectively reduce the amount of waste generated, amount reused and amount recycled through approved means.

#### **3b. Increase Requirements for MRF (Material Recovery Facility) Performance**

A MRF is perhaps the most critical element of Total Recycling, yet seldom is the actual fate of segregated recyclable materials known. A MRF is also a Commercial Waste Generator, and thus is compelled to abide by all the provisions of AB 341. Hold MRF owner/operators to the same criteria for validation of Total Recycling as previously described. Invalidate reported tonnage for which there is no documented proof of end-of-path reprocessing for market readiness.

---

<sup>4</sup> See: <http://www.terutalk.com/New-Forest-Planning-Rule-and-Access-to-Woody-Biomass.html>

<sup>5</sup> PRC §40105, definition of an "authorized recycling agent."

CalRecycle's implementation of AB 341 must recognize and compensate for the fact that recovery of nationally critical resources does not necessarily equate to economical MRF operation. Weighted incentives should be considered to compensate for additional costs where policy drivers indicate the need for focused resource recovery.

CalRecycle is charged with review and reporting upon a local jurisdiction's MRF effectiveness for segregation of recyclable materials from commercial waste, and the MRF and local jurisdiction are already required to provide that data by permit terms<sup>6</sup>.

On-site completion of multiple recycling pathways at a MRF should be considered that facility's proper functioning and of great benefit, especially where conversion displaces use of petroleum by manufacturing alternative low carbon fleet fuels.

### **3c. Establish Business Enforcement Component**

The implementation plan must also recognize and plan for increased cost of waste management that is passed along to jurisdictions, businesses, and then to the general public. Enforcement of an untenable economic condition simply results in a shift of cost burdens, and the readjustment takes time. Commercial economics favor lowest-cost options; for a MRF, this means cheaper-buy-the ton disposal rather than costly or perhaps even absent market means for selling the recovered materials. It does no good to attempt to force uneconomical commerce. Once validated pathways are available and proven economically feasible for a given MRF, enforcement of non-compliance is attainable.

### **3d. Grants for Multi-Family Recycling Programs**

All of the methods noted in this subsection appear appropriate, given the caveat of Total Recycling. CalRecycle can also learn from community-scale solar development. Localizing segregation of recyclable goods at the community scale prior to release to the common waste stream holds many potential benefits to that community, the surrounding region and the state.

Examples might include careful management of organics, especially food waste and greenwaste, either toward internal community usage or dedicated pathway supply where validated Total Recycling options are available. This could be extended toward financially incenting and thus assisting the establishment of public/private partnerships with regional end-of-path recycling manufacturers such as anaerobic digestion and composting businesses.

In another example, multi-agency state and federal grants can support community-scaled total recycling pathways that result in improved resource recovery and capture of thermal energy generation useful for district heating. Numerous associations focus on implementing this concept; the California Energy Commission and most federal agencies have Sustainable Community grant programs. In February 2012, the Energy Commission awarded about \$2 million to the University of California at Los Angeles to establish the California Center for Sustainable Communities.

### **3e. Awards for Business**

The state's Waste Reduction Awards Program (WRAP) warrants expansion. A forth award/support option seems warranted as an expansion of the state's WRAP efforts: provide incentives for initial bench-marking, in the same manner and potentially coordinated with the previously mentioned Industrial Application Center process.

---

<sup>6</sup> PRC §42649.3(i)(2) and CCR 14 §18809.4

Note that local jurisdictional engagement is highly recommended in establishing this commercial generator baseline, including the training necessary for both the business and the agency staff to understand ways that Total Recycling can benefit their establishment's bottom line.

Encouraging commercial adoption of an ISO 9001 process-based quality management dictum of Continual Improvement over the established baseline, WRAP could then offer future incentives including Green Branding certifications.

### **3f. What Did We Miss?**

Consider developing support and incentives for the recycling community itself, to speed adoption of data tracking and total recycling process validation.

Recognize the value of on-site and community-scaled Total Recycling. Highly localized efforts that document LCA benefits of reduced transport related GHG and reduced reliance on petroleum should be sought, highlighted and used to establish Best Management Practices

## **4. Establish Extended Producer Responsibility**

Other provisions of law outside of AB 341 direct CalRecycle toward EPR, and should be one of those "strategy" areas involving close coordination with other provisions of law, regulation and policy, not a direct implementation of AB 341. EPR is well within CalRecycle's legal purview, just not a directly mandated element of this law. This changes, when a producer takes on the role of an end-of-path remanufacturer, the one aspect of EPR that does fall within AB 341.

### **4a. Authority to Decide Products and Targets**

The greater the recognized need to implement EPR for specific targets, the greater must be the implied support for that producer to identify, develop and validate appropriate Total Recycling pathways. When the producer assumes responsibility for a sizable segment of the recycling infrastructure to act as a collection site, broker and or reprocessor, that producer falls within the purview of AB 341. Globally, extended producer responsibility mandates prove most successful where these incorporate streamlined permission to closely integrate end-of-path reprocessing of the returned materials into new products. The producer's decisions regarding what reprocessing systems it chooses to implement this end-of-path then must adhere to all policies, regulations and laws that attend the rest of their business.

Clarification is needed regarding whether and under what specific conditions recyclable materials recovered through a buy-back or other method continue to be, legally, *wastes* and when such materials become non-waste feedstock for that business's remanufacturing to product. Items sent by mail to a shoe company appear to never have been released to the common waste stream and as such were never "waste" in the first place; carpet collected under an industry-association program may or may not have been segregated from mixed waste. Return rebates for specific white goods, such as brands of refrigerators, can come both from the customer who owned the appliance, and as culls from the landfill, MRF and Transfer Station.

### **4b. Packaging**

It is unlikely that anything CalRecycle might implement will significantly alter California's use of packaging, although pressure to use more sustainable products and an increased EPR approach appear increasingly necessary. In context of implementing AB 341, we would suggest that a better focus will be to quickly establish diverse environmentally-sound and cost-effective Total Recycling pathways specifically focused on recovery and conversion of packaging materials.

This is one area that can greatly benefit by encouraging sustainable community scale, highly localized pathways that as discussed previously can return to the immediate community valued products of heat, electricity, fuels, chemicals and other market commodities while capitalizing on LCA-validated reductions in transport-related impacts.

#### **4c. What Did We Miss?**

As noted above: Sustainable Community integration, ISO 9001 Green Branding aspects of continual improvement, on-site reprocessing and remanufacturing of EPR target materials.

#### **5. Reform Beverage Container Program**

California's beverage container recycling program probably has almost as many years of development behind it as programs for newsprint recycling. It is likely that many of the end-points that accomplish reprocessing are not within California's jurisdiction, testing our ability to document the recycling pathway.

The issues addressed in the CalRecycle plan show that beverage container recycling is well advanced when compared to other pathways. Rather than remake the program, we suggest working with the industry to establish baseline pathway documentation first, and from this, to consider ISO 9001 process Continual Improvement opportunities.

#### **5a. Redefine Comingled Rate**

We do not advise changes to the current industry until an LCA baseline of the existing pathways can be established.

#### **5b. Expansion of Minimum Content Requirements**

Without change to the minimum content requirements, establish baseline data for existing industrial pathways from source to reprocessing. Consider LCA aspects of transport, which may well overshadow the minimum content problems.

#### **5c. Program Expansion of All Ready-to-Drink Beverages**

Rather than attempt to change the diversity of beverages recycled, determine what pathways currently exist for the items contemplated for addition, and establish an LCA profile as a baseline upon which to compare expanded pathway development. Ensure adequate total recycling pathways exist for the contemplated changes prior to additions to the types of containers included.

#### **5d. Elimination of 14581 Fixed Dollar Expenditures**

This section recognizes the need to take time to assess the beverage container program, yet would eliminate the current program of fixed dollar amount funding prior to that assessment. We suggest that the state first establish the baseline data for existing pathways and from this model the economics necessary to reach policy goals. Allow current funding to continue unchanged until data are collected and analyzed.

#### **5e. Fiscal Reform to Provide More Funding**

Again: Recycling must account for the entire pathway, and the assessment of system-wide economics must internalize aspects of overarching state and national policy goals. Without attempting to reform current funding mechanisms, first establish baseline documentation for the existing Total Recycling pathways. Assess areas lacking sufficient pathways, and where there is insufficient data to make LCA based comparisons. Focus funding on building broader and more evenly distributed geographic and socio-economic availability of functional, low-impact Total Recycling pathways.

## **5f. What Did We Miss?**

CalRecycle has insufficient data to document existing Total Recycling pathways and establish LCA-baselines from impact comparisons, even for the well-established beverage container program. The need for data that goes beyond just collection of recyclable materials is critical. Broader pathway data collection linked to demographics and impact modeling will strengthen the program's foundation, facilitate more recycling based recovery and identify specific areas that most need funding support.

## **6. Increase Procurement / Demand**

This entire subsection requires actions that are beyond the bill's language, and outside of the context of Recycling per its legal definition. Market management needs to be completely left to other, closely parallel, encoded programs<sup>7</sup>. AB 341 implementation should stop at the point when materials segregated from the waste stream are finally reconstituted in raw materials ready for the marketplace.

### **6a. Increase PCRC and EPP Purchases by the State**

### **6b. Reform SABRC Requirements and Add Enforcement**

### **6c. Interagency Agreements with CalTrans, Other Procuring Agencies for Testing TDPs**

### **6d. Minimum Content Requirements**

### **6e. Sales Tax Breaks on Private Sector Purchase of RCPs / EPPs**

### **6f. Financial Incentives for Manufacturers to Use Recycled Materials**

### **6g. What Did We Miss?**

## **7. Other Materials**

### **7a. Tire Incentive Payments, EPR, or More Market Demand**

As with Beverage Container section 5, California's waste tire resource recovery programs have decades of history that have shaped current pathways from generator release to readiness for market re-entry. And as with Section 6 above, "Increased Procurement / Demand", we suggest that market adjustment actions that take place after market reentry are the substance of other directives, and should be kept separate yet parallel to AB 341 implementation. Incentive programs directly tied to AB 341 implementation need to be focused on the realm of Total Recycling, supporting infrastructure development that creates broader geographic access to LCA validated pathways.

CalRecycle is already responsible for annual reporting of the comparative costs and benefits of waste tire recycling or conversion<sup>8</sup>. As in our comments regarding beverage container reform, determine and document what pathways currently exist for recycling / converting waste tires, and establish an LCA profile as a baseline upon which to compare expanded pathway development. Ensure adequate Total Recycling pathways exist prior to changing program rules and funding mechanisms.

Perhaps in no other recycling arena has there been such vehement industrial opposition to illegal, undocumented, and unenforceable export of waste tires overseas. CalRecycle may not effectively hope to stop this export practice, but the state can make it necessary that each Total Recycling pathway be documented and verified to be considered Recycling.

---

<sup>7</sup> Increasing market demand for recycled materials: encoded powers and duties to CalRecycle, PRC §40507, for Cities and Counties PRC §41074 and §41373 and by direct market Development Program dictates of §42000 et.al.

<sup>8</sup> PRC §40507 and §42860 et.al.

## **7b. Plastics**

We agree with the draft state plan's statement that "finding a path forward to the management of plastic in California is one of the keys to a more sustainable climate for the production and recycling of this resource." There are also as many programs as there are types of plastic, and AB 341 implementation therefore needs to closely focus on the relatively narrow regime of Total Recycling, again leaving market management to other closely coordinated, discrete efforts.

CalRecycle already maintains a Plastics Recycling Information Clearinghouse<sup>9</sup>; given the statutory definition of Recycling, the data in the Clearinghouse needs to be revisited for identification and documentation of Total Recycling pathways available to California stakeholders.

Only recently have there been substantial advances in the end-of-path reprocessing of all polymers, plastics included, such that remanufacturing to market-ready condition can now be extended to a much broader array of recovered materials. Depolymerization can now cleanly and economically separate the molecular constituents of plastics, producing to-specification alternative fuels and chemicals (EPA's "Open Loop Recycling") as well as new polymers (what EPA terms "Closed Loop Recycling")<sup>10</sup>. This is an excellent example where CalRecycle can follow the previously identified progression of identification and validation of existing pathways to establish the baseline, and then determine where improvement can be encouraged to better provide environmentally sound and geographically distributed access. Knowing that new methods for end-of-path remanufacturing exist that can be incorporated in the supply chain of plastic materials segregated from the common waste stream, the state may then identify specific needs and opportunities.

A well developed, documented, and incentivized Total Recycling infrastructure will maximize AB 341 policy goal attainment.

## **7c. E-Waste**

This is a well-developed section. One aspect needs to be explored in context of AB 341: critical resource recovery. Many countries have placed stringent prohibitions against export of e-waste, and much of this stems from two aspects: (a) the potential to recover minute amounts of rare and precious metals with sufficient processing, and (b) the inherent value of the plastics both as high-energy fuel and as feedstock for depolymerization to constituents.

CalRecycle is already charged with managing both e-waste and metallic discards<sup>11</sup>; both sub-programs include provisions for assessing fees. Taken together, this might be an avenue for recovery of rare and precious metals from the MRF residual "fines", assuming carry-through of these resources from management of the bulkier recyclable E-waste entering MRF processing.

As with each section, a process of identification of existing pathways, LCA validation of associated impacts, encouraged best management practices, and targets strengthening and broadening of the Total Recycling infrastructure provides the core implementation.

## **7d. C&D: Funds for Retrofitting Equipment to Met AQ Standards**

State support for systems upgrades necessary to remain in compliance should be available via competitive solicitations favoring innovative solutions, rather than being seen as entitlements.

---

<sup>9</sup> PRC §40507 and §42520

<sup>10</sup> EPA 842/09 Waste Definitions

<sup>11</sup> PRC §42160 et.al. (metals) and §42460 et.al. (e-waste)

As an example, small modular thermal reprocessing systems are becoming increasingly available and are in use in California. These can offer synergies of localization and perhaps generate biofuels as alternatives to diesel used currently to run the equipment.

#### **7e. C&D: Expand CALGreen for Deconstruction and Add Enforcement**

This is a parallel effort worth coordination, but outside the mandates of this law. The existing CALGreen program is a good focus for cross-program cooperation.

#### **7f. Fiber: Bans on Cardboard going into Landfills**

The difficulty with the statement regarding cardboard's inherent "recyclability" is that without an economical pathway, there is no incentive to remove this material. Cardboard is already a commodity positioned at the end of useful fiber life. A careful assessment of existing Total Recycling pathways should show that GHG emissions related to long-distance transport to markets for waste cardboard are injurious and less economically sound than localized remanufacturing. Fortunately, cellulosic conversion methodologies that can incorporate waste cardboard as feedstock are increasing. Critical state assessment of need for reprocessing coupled with geographic distribution of high-tonnage cardboard fractions in the waste stream may indicate infrastructure development opportunities and direct use of restricted incentive funding.

#### **7g. Fiber / Resin: Grants for Mid-scale Manufacturing & Source Reduction**

As above, cellulosic and polymer reprocessing and remanufacturing methodologies are increasing. Critical state assessment of need for reprocessing coupled with geographic distribution of high-tonnage fractions in the waste stream may indicate infrastructure development opportunities and direct use of restricted incentive funding.

Again, it is not within the purview of AB 341 implementation to include post-reentry market adjustment mechanisms in the new law's implementation, but rather this is a topic for cross-program, cross-agency coordination.

#### **7h. Used Oil LCA Follow-ups**

This program is the prototypical mechanism for all other Total recycling pathway documentation and validation. CalRecycle already must develop and report detailed data on an annual basis<sup>12</sup>; the accounting necessary for the Used Oil recycling program can be a model for Total recycling pathway identification.

#### **7i. What Did We Miss?**

There will always be a new "waste" that has yet to be incorporated within the existing Recycling infrastructure, just as there will always be new tools that can be employed to solve heretofore untenable resource recovery challenges. The ability to anticipate and adapt to change needs to be a guiding principle for AB 341 implementation.

### **8. Governance / Funding**

#### **8a. New Models for Funding Waste / Materials Management**

CalRecycle must reverse the paradigm; funding must come from and be proportional to the tonnage recovered, not the tonnage lost to disposal. Stakeholders should be willing to pay for a service that creates jobs and saves resources.

---

<sup>12</sup> PRC §40507 and §48600 et.al.



Tonnage recovered can equate to the diversity and stability of recovery infrastructure; validation of Total Recycling pathways can be an income producing activity, with basic fees for certification augmented by some equivalent of "success fee", whereby the state, and the public, benefit as the success of recovery increases.

#### **8b. Other Code-Level Ideas**

Define in-state Total Recycling as preferred to multi-state or international pathways, where LCA validation provides data of GHG reduction benefits of localization.

Add chain-of-custody documentation and reporting to certification requirements of recyclers, recycling centers, and processors.

Define how much processing must occur before a recyclable material recovered from the mixed waste stream is no longer legally "waste", what NY calls "cessation of waste."

Revisit and clarify laws and regulations that address, "Use Constituting Disposal."

Define "waste" as a valued resource, up until the moment of final disposal. Then dig it up and recycle that, too.

#### **8c. Authority for Waste and Bottle Bill Functions Such as Enforcement, Data Gathering, Monitoring, etc.**

Local jurisdictions need CalRecycle training and authorization to properly identify Total Recycling pathways and, more importantly, the local lack of adequate recycling infrastructure. Data gathering for infrastructure documentation and validation is necessary to find economically valid opportunities to enhance the local process that is legally defined as recycling.

#### **8d. What Did We Miss?**

##### **9. Source Reduction**

Rather than separately present concepts of Source Reduction by waste type or generator characteristics, we would offer a broader interpretation.

Any commercial waste generator can segregate what appear to be useful, "recyclable" materials from the discards and detritus generated as they pursue their business. The difficulty is not in the segregation, it is in having readily available, clearly understood options for transferring that source-separated material out from under the daily business operations. When a local jurisdiction can present a reasonable alternative pathway for this transfer, it can convince Commercial Waste Generators to separate their recyclable materials rather than release those resources into the common mixed waste stream. When the options are either too complex, too costly or simply unavailable, little choice remains but strict disposal. Breaks in the recycling infrastructure at any stage eventually result in lack of reasonable alternatives for the waste generator, just as the absence of an economically viable market for reprocessed plastics results in less, or no, legal recycling of plastics.

CalRecycle can work with each jurisdiction to document and LCA-validate existing legal recycling pathways, to identify inadequacies in that infrastructure, and to capitalize on the economic development opportunities presented by an excess of supply and an available means of utilization, all within the dictates of AB 341. Transparent presentation of available choices will then encourage commercial waste generators to select methods best suited to their form of

business, and result in an increase in full-cycle return of the recovered resources to the marketplace.

Tightly localized Total Recycling offers excellent opportunities to reduce transport-related impacts. Regardless the existing local recycling infrastructure, Commercial Waste Generators can legally choose to implement two additional forms of waste reduction:

- (a) *On-site Utilization*: Globally, source reduction is coupled with integrated on-site reprocessing and remanufacturing industrial systems, reforming the company's residuals into fuel for combined heating, cooling and electricity generation, into fuels for their fleets, and/or into raw materials and raw chemicals for primary manufacturing. This type of Total Recycling internalization should be aggressively sought by local jurisdictions, with the support of the state.
- (b) *Eco-Park Utilization*: There is no specific prohibition against "wheeling" recoverable materials from one business to another, creating multi-business Total Recycling. These opportunities where "one man's trash" becomes feedstock for another's business should also be sought at the local level and supported by CalRecycle expertise and funding.

### **9a. Organics Food Programs, Backyard Composting, Vermicomposting**

### **9b. Greener Products through Product Certifications / Eco Labels**

### **9c. Promotion of Local Zero Waste Activities**

### **9d. What Did We Miss?**

#### **10. The Other 25%**

Terminology clarification needs go beyond the two subsections presented here, and must very carefully adhere to existing code. Again, by law, segregation of recyclable materials does not constitute Recycling. Completion of the full pathway from source to reconfiguration and market-readiness does.

Total Recycling, or "recycling" per law, is any infrastructure pathway that cleanly and legally recovers a recyclable material from the mixed waste stream, cleans and treats, and then reconstitutes into raw material ready for market reentry.

The implication of this section is incorrect: there is no material in the waste stream that is inherently beyond some form of Total Recycling, only material that in a particular location can find no complete pathway from source through cleaning, treating and reconfiguration to a market-ready material. We must recognize the specific breaks in the infrastructure and fill those gaps with appropriate collection, cleaning, treatment and reprocessing capabilities. This is indeed the proper implementation of the legislated policy goal.

For "recycling agents" to claim that their actions constitute Recycling, by law, there must be clear documentation that those actions follow segregated materials through to that reprocessed state of market readiness. A contract to collect and broker recyclable materials places that agent as an integral and critical part of the Recycling infrastructure, but it does not constitute proof of Recycling.

#### **10a. Define Post-Recycled Residuals**

The current law does not mandate increased recovery actions, only a policy that the state seek to manage 75% of all waste generated by processes of source reduction, recycling, or composting. As jurisdictions approach this non-disposal, non-transformational waste

management goal, the material NOT processed in this manner still needs attention. Some of this tonnage can be referred to as "post-recycling residual", waste from which all feasible extraction of recyclable materials have been removed. Other tonnage will simply not have been processed, and on a percentage basis ranges from whatever is beyond the jurisdiction's current recyclable materials recovery rate, to a nominal 25% by 2020, assuming the policy goal is attained in that locale.

#### **10b. Define Beneficial Use for Policy for Other 25%**

This section appears to be consistent with standing law regarding feedstock for transformation facilities. It highlights the need for a standardized procedure for evaluating "beneficial reuse" beyond what can be validated as recycling. We would note that there is no mandate for recovery above 50%, only a policy goal, and that between now and 2020, even the policy remains a future set-point, not a firm and measurable control on fate of the material.

#### **10c. What Did We Miss?**

##### **General Comments**

CalRecycle and local jurisdictions now bear the responsibility to expand upon and improve the state's recycling activities and infrastructure. To do so, the definition of Recycling must be clearly understood as defined in the law and applied to the new effort. This requires examination of the existing process and its components.

Without altering the intent or mandate of solid waste management of the IWMA, the new law increases data management provisions and *requires* that a jurisdiction's SRRE of its Integrated Waste Management Plan (IWMP) be constantly updated with respect to "existing, expanded, and proposed" NDFs, as the information regarding those facilities becomes available to the jurisdiction. Existing law allows an NDF to be essentially whatever the local jurisdiction feels should be considered an element of the recycling infrastructure. The data collection and maintenance mandate is in place.

Mandated commercial recycling must equate to the process defined in existing law, and not to a foreshortened version that excludes the last steps, reconfiguration of recyclable materials to create market-ready materials. Identifying, analyzing and educating stakeholders about the diversity of pathways for Total Recycling will concurrently clarify where efforts are ended to fill gaps in that infrastructure.

Comparative analysis of existing and potential pathways for the full path of recycling will enable identification of high-impact aspects such as long-distance transport, and opportunities for low-impact alternatives. With broader accessibility to low-impact alternatives customized to the actual wastes and residuals generated during commercial activities will come increased acceptance and utilization of recycling as a means to cut costs and increase commercial efficiency.

Of greatest concern for this draft: (a) lack of consideration for GHG and fossil fuel impacts of long-haul transport of segregated recyclable materials, and (b) a foreshortened interpretation of what Recycling is, by law, resulting in undervaluing the importance of localized processing and reconfiguration to market-ready materials.