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Support New Business to Solve Old Problems with Kentucky's Keystone Waste from Bourbon & Brewing

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Cover Page Footnote

This document is submitted to fulfill the requirements and bestow permanent title by the Commonwealth Policy Coalition: Samuel Kessler as Senior Fellow, Austin Gabhart as Honorary Fellow, Hailey Mattingly as Honorary Fellow.

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Support New Business to Solve Old Problems with Kentucky's Keystone Waste from Bourbon & Brewing

February, 2022

A novel policy system of income & refundable property tax credits for sustainable use of Kentucky's "keystone" wastes – stillage and spent grain - designed to stop pollution risk and surge business growth across the Commonwealth

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Note on State & National Applicability

Published whitepapers in the Commonwealth Policy Papers are intended to provide detailed examples of novel policies which may be applicable in multiple states and provinces of the U.S., in addition to serving as a potential source for "trickle up" solutions to the Congressional level. CPP whitepapers are developed after extensive research and development of a particular policy solution by the Commonwealth Policy Coalition with a significant number of personal communications which are synthesized with other sources to then develop policy conclusions.

This whitepaper refers to bourbon stillage and spent grain as Kentucky's "keystone" waste, which relates to the similar ecological term "keystone species". This means a species that is vital to energy transfer throughout the entire ecosystem. Keystone wastes, then, may be uniquely identified within the political economy of any state, hold great potential to be "upcycled" to extract new economic value from creation of new products or valuable uses, and by being a keystone waste, have those uses proliferate energy throughout the regional economy.

This work provide an incentive model for keystone wastes which have a provider and a use. It is equally applicable for policymakers or advocates wishing to place a policy incentive behind waste-to-product upcycling, businesses involved with methane sequestration & renewable biogas energy, and shifting regulatory and penalizing models of pollution into incentive model for alternate pollutant use while maintaining integrity of environmental standards. This solution was modeled from significant stakeholder feedback on "the backside of bourbon", and was drafted according to interest-based negotiation principles which are reviewed in detail from the work of materials of Roger Fisher and the Harvard Program on Negotiation.

Detailed below are issues and a policy solution to upcycle Kentucky's "keystone" wastes and grow businesses in the process – with potential effects from removing the bottleneck on bourbon production and expanding a greenhouse gas reducing biogas sector to lowering the regional price of milk.

ISSUE SUMMARY

Introduction: The Need for Legislation

In recent years, Kentucky has seen record volumes of grain byproducts (called "stillage" or "slop" waste) from alcohol-manufacturing coinciding with record growth in the bourbon industry, especially with smaller sized distilleries. Similar trends have occurred with production of spent brewers grains, and increase in craft brewing in the Commonwealth of Kentucky and across North America. For distilleries, their slop

byproduct is considered an industrial waste, which is also the case for some breweries – legally for the fact that is results from an industry production process and scientifically as the organic pollution of stillage can damage the environment due to its ability to remove oxygen from water and its high acidity which is damaging to soil health and livestock health in some cases.

Stillage slop is a massive bottleneck, and is often fed to cattle which in certain instances provides the opportunity for low cost feed but can also be a drowning hazard to livestock if not fed properly and can yield beef of lower quality compared to non-spent grain feeding. Spent brewers grain has similar issues. In general, feeding a high liquid percentage to livestock from stillage can cause liquid stool which can run into streams causing pollution and increase the acidity of the water, and the feeding of whole stillage (higher in liquid percentage than other forms of stillage) has been noted to have adverse health effect with some breeds of cattle according to KY Department of Agriculture studies. (Limestone & Cooper consultants; Sr. Trade Advisor, Commissioner of Agriculture, Personal Communication 2021).

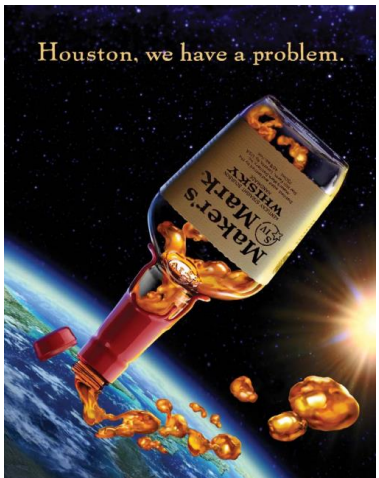


Photo Collage Credit: Makers Mark, 2009 Marquette Workshop Presentation. Accessed from the KY Energy & Environment Cabinet at: https://eec.ky.gov/Environmental-Protection/Compliance-Assistance/DCA%20Resource%20Document%20Library/Anaerobic%20Digestion%20Case%20Study%20-%20Maker%27s%20Mark.pdf

Solutions are needed to what, for some, has quietly grown towards a potential crisis of stillage pollution that threatens waterways and the sustainable image of the industry. For others, regardless of whether certain uses pose an environmental concern managing stillage is still an issue to solve to make bourbon. Despite tax credits focused on supporting tourism growth and other aspects of the bourbon industry stillage has been an issue for every distiller to solve since the birth of bourbon in Kentucky, and in those initial years dumping stillage directly into rivers was the solution. In the time since, industrial developments have been made to dry stillage waste into spent grain (DDGS) which is arguably an overlooked but key chapter of the industry's development and also marked a step towards avoiding water pollution however the process has a high energy demand. Even with the large distillers evolving to use dryers, continued adaptation is still needed as the bottleneck is based on dryer capacity which then set a limit to expansion beyond that capacity until more are installed. Many small distillers cannot implement these systems, meanwhile, brewers have faced similar challenges to manage their own spent grain like small distillers and have looked toward other uses.

Seeing an opportunity, innovative businesses have developed new methods to upcycle stillage waste which avoids pollution potential and creates new products -such as biodigestion and biodiesel production, innovative methods to extract sugar for diabetics, carbon, and extracting raw protein for use in livestock feeds, and even successful models of commercial vermiculture all of which have either demonstrated success or have extensively studied models which can grow new economy on the backside of bourbon & brewing. (A specific case study with biodigestion is considered in this brief).

A solution to spent grain wastes that aligns environmental and economic benefit has not yet been seen from the Kentucky legislature until the publication of this brief which resulted in the initial bicameral & bipartisan introduction of HB 627 in 2022 by House Republicans and Senate Democrats. To guide the future development of that bill, as well as efforts in surrounding states or at the national level, this brief takes a wholistic view of stillage as both a serious potential issue to the environment and serious potential growth to the economy if properly upcycled to be *transformed* from a waste into a value-added eco-friendly product. As distilling & brewing are significant "keystone species" of

the economy of several states in America's distilling belt, CPC concludes that leveraging the political economy behind stillage for upcycling new value may have a ripple effect across several industries and realize new growth.

There are various reasons as to why the spent grain issue has not reached prior legislative attention which this brief lightly explores – however, a key factor is in the need to recognize the potential for growth of an entire backside economy with outside business partners to distilleries and brewers who may manage stillage as a waste and upcycle new value, a cycle which may continue for multiple iterations. This could entail recursive benefit, however like any domino effect, an initial push is needed to set it into motion. Stated in the above Maker's Mark marketing of "Houston, we have a problem" is a plea for help to the outside world, a plea that CPC suggests is for a policy solution to push the first domino to support innovative partners outside of the bourbon and brewing industry. Dryer systems of distilleries may continue to be a critical component however the state should not fail to consider harnessing new economic potential, which may create new markets especially in renewable biogas energy.

With new portions of the economy as the goal to incentivize, it takes those who hold the strings of the political economy to surge innovators forward when those innovators are lacking support or representation in present time. Though certain solutions with the largest distillers and brewers have remained prominent, those most forced to innovate and develop external partnerships to manage spent grain and contribute directly to the local economy have been smaller producers. (It is known that from larger producers a fair amount of DDGS is regularly shipped to China for example, which was also a significant target to foreign tariffs in recent years which also suggests to the policymaker that backing more innovative local outlets to upcycle the waste may improve economic security.) The beer industry is dominated with many craft and regional brewers which are often ignored in spent grain policy decisions due to the prevalence of distillery stillage, meanwhile the largest distillers who hold most influence in distilling policy have been preoccupied with other equally significant policy concerns from their perspective which leaves medium to small distilleries continue to deal with what is to them a more significant liability of stillage as a bottleneck. With stakeholders arguably

underrepresented, is the legislature who must respond to the problem by affirmatively stepping in and proposing legislation which would also create a space in legislative committees for both innovators and distillers to negotiate over a well-tailored policy solution that considers all options from dryer systems to maximizing new economy on the backside of our bourbon and brewing keystone industries. Although it is not always favorable for any one state to introduce novel legislation before another, the home of Kentucky Straight Bourbon Whiskey which also includes a number of brewers is optimal to take unique action to an issue that is also uniquely affecting the state. Successful implementation of a well-tailored policy to avoid pollution and grow new business may have ripple effects that extend to other states in the region enacting the same.

Key Policy Issues

In producing this comprehensive whitepaper, the Commonwealth Policy Coalition has conducted significant work in interviewing stakeholders on the issues and opportunity with spent grain wastes to provide a tailored solution to the legislature up-front. A bibliography with personal communications is included. Within the Commonwealth it is known that 350 stillage gallons are produced per 53 gallons of barrel-strength whiskey according to a study ordered by the KY Distillers Association. From this ratio, one can estimate that 100 million gallons of slop stillage were released into the environment in 2018 according to an internal survey of KY Distillers Association members. This is no small volume and is only based on those who were surveyed and responded and given upticks in distilling one may expect that the value is now above 100 million gallons. CPC suggests six major reasons that the significant growing amount of spent grain has become a major environmental and economic issue, which are generally universal with surrounding states as well:

1. **Distilleries are liable for pollution as a stillage source along with the individuals feeding or dumping stillage, where current oversight is inadequate.** Even if the legal class of stillage were changed away from being an industrial pollutant, it can be regulated by the State under the Clean Water Act from the inherent nature that stillage can affect waterways by having acidic pH, high biological oxygen demand, or otherwise causing odor from decay on the surface. Current staff of the Energy & Environment

Cabinet suspect greater stillage pollution than what is observed especially in agricultural settings and do not have adequate resources to surveil the issue. A handful confidential witness accounts were orally provided to CPC Associates which described efforts between Nelson, Spencer, and Anderson counties to pollute and in some cases evade environmental monitoring from the state, EPA, and others. One instance included trucking of several 50,000 gallon truckloads of stillage from a Jefferson County distillery across county lines to a more rural area where it was regularly dumped during rain events unknown to the distiller stillage provider, which assumedly paid less than the metro sewer discharge cost assessed t or otherwise saw this outlet as a lower cost than processing dried grain. This instance removed a waste stream from innovative business.

2. **Distilleries must remove stillage wastes to make room for continued production- it is a "bottleneck". The realization of that bottleneck has caused shifts in the way stillage is handled and perceived**. As others have realized that they are servicing this bottleneck and removing waste, it is not uncommon for farmers or others to charge a fee to handle the waste either at logistical costs of transporting it, or above this cost to compensate their service or other costs (such as running an innovative renewable biogas digestor). Certain farmers take the stillage for "free", bearing only the logistical cost, though there are some concerns from KY Dept. Agriculture studies whether stillage is somewhat detrimental to health of certain cattle breeds. In general, bad actors can use payment for their service as an opportunity to pollute for profit and undercut innovative businesses. Certain distillers may prefer the least-cost outlet without concern of the use which is currently not tracked, or otherwise have concerns about price-gouging during peak production and see that as a justification for more insular stillage management in-spite of a great potential for external innovative businesses to grow. Those views have led to certain projects such as distillery owned & operated biodigester systems, however unlike dryer systems, most of those complex digestion efforts which include digestate management have not been successful when operated by distilleries. Third-party biodigestion companies have seen success with stillage brought to their own property, however there has not yet been a direct integration between third-party owned & operated digestors on leased property area of a distiller or farmer.

3. **As a result, innovators can be undercut by bad actors which can result in continued pollution, or otherwise they struggle to see a consistent stream of stillage wastes**. This includes environmental issues such as illegal lagoon operators who dump, illegal landspreading, overfeeding of cattle with stillage wastes, and economic issue of no consistent stream of waste for innovators to transform. Waste streams may be more consistent in the brewing industry than bourbon however industry studies are needed to confirm.

4. **Rural infrastructure cannot handle stillage being dumped into the sewer. Stillage is also an urban issue concerning for river cities like Louisville.** Sources have suggested that discharges from metro Louisville's sewer have been more than EPA nutrient discharge limits for the Ohio river and fines have been delayed by the EPA prior to 2022 but may now resume. The discharge cost to distillers in urban areas is significant and may rise.

5.) **There is growing potential for a legal and/or PR crisis if certain environmental interests are not met**. Sources suggest that citizen groups around the Salt River and across the state have been preparing legal action against distilleries and the cabinet which could brew a PR crisis around KY bourbon, however a solution focused on green innovative options could have the opposite effect and instead "make bourbon green".

6.) **Breweries may have found other sustainable options to handle spent brewers grains with themselves and outside parties compared to distillers**. There are economic hurdles to elevate brewers grains into a resource with those partners, just as distilleries often dry stillage in an attempt to make distillers dried grains as a resources from distilling waste and must invest in capital. Likewise, **although dryer systems are a legitimate option to avoid waterway pollution for distillers, they are not sufficient to solve the problem and have poor profit margin and energy demand which suggests that third-party management partnerships more common to breweries are needed especially with mid-sized and smaller distilleries.**

Both large and especially small distilleries produce stillage. As of 2019, 10% of large distillers (greater than 5 million proof-gallon capacity), who handled stillage with dryer systems to produce dried spent grain (called distillers dried grains "DDGS") still had

the byproduct because their systems could not handle all the volume. For small distillers, 90% had stillage byproduct and either cannot afford dryer systems or have limited space and cannot install them. Most large distillers have stayed focused on dryer systems, but these are expensive to operate with profits closer to breaking even, especially with a significant amount of spent grain sent to China that can be subject to high tariffs. These dryer systems a have high energy demand, which is usually from non-renewable sources. (That also adds to grain products having a poor carbon-emission cycle.)

CPC was not able to obtain data on spent brewers grain statistics prior to publication, however, there are several instances of innovation in brewers grain management which are known to work for stillage management to be noted. In general, innovative business owners have created cost-effective and green solutions to up-cycle stillage and spent brewers grain. Some are already seeing a "green" benefit to their own pocketbooks and alcohol-producing partners.

After COVID-19 and in times of inflation, there is need to support these innovators and a more sustainable future of Kentucky's economy at the backend of signature industries.

POLICY NEED

There is a policy need to provide economic support that can link distillers and brewers with spent grain managers as opposed to linkages with pollution or management with high energy-intensity, and likewise provide direct financial support to innovative solutions so initial capital hurdles can be overcome and self-sustaining business can be achieved. In 2017, KY Distillers Association requests to the Governor's Office to create stillage tax credits went unheard in the state legislature. These arguments were shelved due to more pressing matters with other legislation on parity with other alcoholic beverages, and were not brought to any other level of government. Meanwhile, no legislation in the Commonwealth of Kentucky has ever sought to place an incentive on spent grain or act on the potential of the waste material as a catalyst for economic growth.

According to smaller producing distillers (who also have more stillage slop as a byproduct) the current distilled spirits nonrefundable income tax credits in Kentucky,

also known as “Barrel Tax credits”, are too low and not cost effective. They must be claimed for reinvestment in property which still allows a certain margin over the property investment to be an incentive, yet green stillage use and stillage management is not included under the program. Meanwhile, the KDA and others have suggested elimination of barrel tax or at least making the ad-valorem credits refundable - but outright barrel tax elimination would forfeit revenue to the Legislature without an associated gain to the Commonwealth. Within the industry the barrel tax is considered unfair treatment of Kentucky’s signature bourbon product - yet no proposals have looked to reform the purpose of the present incentive system or improve it. For example, using barrel and income credits as an incentive to channel stillage to green uses and innovative local industries.

In 2021, the Governor’s Office held a surplus stillage business competition where the winning company supported this proposal. The KDA completed extensive research with Beam Suntory identifying external parties to handle stillage. Further, according to the President of the KY Dairy Development Council, incentives and revenue from a program that supports feeding the solids out of stillage and slop, could create revenue for farmers. Rural renewable biogas production from stillage would also create a substantial incentive for KY farmers that could lower feed costs. This may attract new dairy farmers relocating from drought conditions in the western US. The future may also see wider use of stillage wastes for consumer and energy products. Currently this includes deer-attractant products like Buck Bourbon, and biocoal produced by the UofL Conn Center for Renewable Energy. UofL has also conducted extensive study in supplying the campus with renewable energy from slop waste biogas and holds a unique patents to do so in a rural areas. This would create an expandable model for urban renewable biogas in the US and create an educational opportunity. An incentive program would increase return on investment and benefit local partners like Brown Foreman, encouraging the decision to proceed. A successful project could be replicated at other state universities and industry. In short – the benefits from a stillage incentive are numerous and exceed that offered from traditional tax credits. The legislature must act now to introduce the measure, and create the following program, to be directed by the cabinet.

The legislature can now solve the problem with stillage incentive legislation that would surge sustainable endeavors for stillage management and support distillers dealing with growing stillage wastes. Absent legislation, stillage pollution would remain a competitor to innovation and barrel taxes would remain punitive.

CPC POLICY SOLUTION

Summary: A proposal to create a new tax credit system on sustainable use of spent grain as Kentucky's keystone waste, including the following: refundable income tax credits with value based both on spent grain material type and the type of use of businesses engaged in sustainable uses of stillage, to be awarded to sustainable businesses, and distillers and brewers to provide to them, in addition to refundable income tax credit capped at the prior year's ad valorem tax and assessed by at least 1.5 times the value paid to spent grain mangers approved under the first credit, reallocation of the ethanol tax credit to partially finance the new proposal and eligibility of ethanol producers to claim the credit, expansion of the investments eligible under the current nonrefundable Distilled Spirits Tax Credit program to include internal investments (i.e. dryers) and investments in community partnerships to manage spent grain wastes.

Policy Goals

- To improve state investment in the biofuel sector and grow new innovative business
- To surge sustainable business growth
- To "make bourbon green" and eliminate stillage and spent grain pollution risks via incentive model
- To support a combination of solutions to a major stillage issue, from distillery dryer systems to renewable biogas companies on leased farmland.
- To support advanced technology *and* agricultural stakeholders including the Kentucky Dairy industry, and collaboration between high-tech and low-tech partners.

Policy Components

This CPC policy solution is an entirely new from-scratch model of public policy for turning a potential environmental crisis and economic hinderance, in this case Kentucky's bourbon wastes, into an economic opportunity. The components of this solution have the end-result of aligning economic and environmental drivers in a way that stops pollution with a wastes and surges green business innovation forward in a wide spectrum from agriculture to renewable biogas and consumer products. This could be considered as an approach for any waste product, not only spent grain, where an incentive for upcycling of that product may benefit a multitude of industries and surge sustainable business growth. In addition to introducing the components of this policy, designed for spent grain wastes from Kentucky Bourbon & Brewing, a detailed consideration of beneficial impact and defense of the novel solution is provided in the remainder of this brief. An incomplete version of this policy was first introduced by the KY General Assembly in 2022 via House Bill 627 with duplicate Senate version, and is published in full bill form with amendments in the Commonwealth Policy Papers. The proper bill has the following components:

1.) A new board under the state Economic Development Finance Authority (KRS 12.010) shall be created to develop and put into effect the Kentucky Stillage Incentive Program. 13 members shall include appointees of the Ag. Commissioner, Energy & Environment Cabinet, Cabinet for Economic Development, the Secretaries of Finance, Public Protection, and Labor, the Governor's Office, and a small number of industry experts from agriculture, distilling, and bio-renewables (board members cannot claim credits).

2.) The board shall research and assign a financial value per gallon of whole stillage (slop) and other products (which are explained in the CPC model document) for providing credit.

3.) The board will assign credit applicants to a categorical system, which is to include feeding in a low value category and approve full value of the credit to uses of stillage external to the distillery that are helpful to the environment and manufacture "value-added" products (like extracted sugar) in higher categories. These credits will be given for stillage providers, and stillage users in compliance

with environmental regulations. (Note that CPC has developed an entire model for this program).

4.) The board shall provide income tax credit (personal, corporate, or limited liability) to stillage users, refundable and transferable, calculated by the value per volume of the spent grain material times the volume, times the usage tier percentage intended to indicate environmental, innovative, and economic value.

5.) The board shall provide refundable barrel tax credits to stillage-providers giving to the approved stillage users. This non-transferable tax credit is to be based on a multiplier of payment made from providers to users for their green removal of stillage (Examples developed with existing distiller information are provided in CPC model).

6.) In addition to volume and use-based credits on spent grain, the legislature shall allocate a for stillage providers to green users equal to the value of all barrel tax assessed in the prior year, and that reinvestment in stillage management also be added to qualified costs for the existing Distilled Spirits tax credit under KRS 141.389 (including internal distillery-owned capital for value-extracting technology, energy production from stillage, combined heat & power systems). Per year, the board shall establish a sufficient individual cap for this credit and must establish a ceiling for distillery payment to external green stillage users. Due to substantial impact in the general economy compared to other tax credits, the legislature may consider other reallocation of existing credits to cover barrel tax reduction for improved budget impact, although there is current surplus.

7.) It is recommended that the legislature reallocate current ethanol fuel tax credits to fund the volume and use-based credits under this act. The board should establish a higher individual cap for stillage users than distilleries. (This may be reallocated from cutting half of the ethanol tax credit program, since seldom reinvestments have already occurred with general ethanol which also has federal subsidy, and the cellulosic ethanol program intended to promote sustainable biofuel has never seen credit claims according to the Dept. Revenue. Stillage

sourced from ethanol producers could be assigned by the board to a middle category of credit for any green use).

SOLUTION IMPACT

Kentucky (or others in areas of high distilling and brewery density across rural and urban areas) would not be the first state to address waste problems with a new incentive for successful green businesses. The Commonwealth Policy Coalition's (CPC) research has developed this solution to grow business from stillage wastes based on other successful state policy, and then tailoring that concept into a model that is designed to work with spent grain including in cases where that grain is classified as an industrial waste and otherwise poses a pollution risk.

Tax-based measures to form an incentive on streamlining wastes to certain groups, and indirect subsidizing of those groups through industry, has worked in other states with other wastes. The effects of those policies surged the farm-based bio-renewable energy industry with a key example of Vanguard Renewables national growth after Massachusetts policy on green waste management (see report PBS, 2018; agreement w Starbucks & DFA 2021). Given that this measure was a tax penalty for diverting grocery store waste to landfills, and there is generally not a concern with illicit discharge of grocery store wastes, the tax penalty was successful in "indirectly subsidizing" biogas as higher management fees for biogas groups became competitive. This allowed the company to overcome capital hurdles, and develop in other states which do not have such legislation after forming partnerships with farmers and other local groups. The design of the incentive-based model instead of a penalty accounts for prioritizing certain uses over others in terms of economic and environmental value, and then accounts for an indirect subsidy by providing the additional tax credit based on payment that distillers (and brewers if the tax credit is extended) make to managers of the spent grain who are taking the material for that desirable eligible use. Reallocating ethanol tax credits to the program which several states initially enacted in an often failed attempt to keep up with

EPA fuel quotas and including eligibility for ethanol producers as stillage producers to qualify for the spent grain credit will also lower budget impacts to state finances – especially for the initial number of years the program is enacted.

The result of this solution is that the more spent grain waste is managed sustainably, the more tax credit is provided for the sustainable stillage user and stillage provider. As seen with similar solutions to waste product issues in other states, this measure also has the capability to accelerate growth in Kentucky's bio-renewable industry. CPC and adjunct partners have analyzed a case-study finding that, even without the indirect subsidy component of the tax credit playing a role, payoff timelines could be reduced by up to 50% for anaerobic digestors eligible to receive this tax credit even on a nonrefundable basis (Figure 3).

Apart from the credit based on volume and use of stillage intended to build a streamline of waste to certain upcycling uses, other credits under the actual provide an incentive for distilleries (or breweries, if expanded) to compensate stillage users for their waste management service. This is not to the detriment of the distiller's interest in turning a profit – their benefit from the solution is multiplied, because the amount they pay stillage users is multiplied by a factor to equate to the ad-valorem tax amount from the prior year.

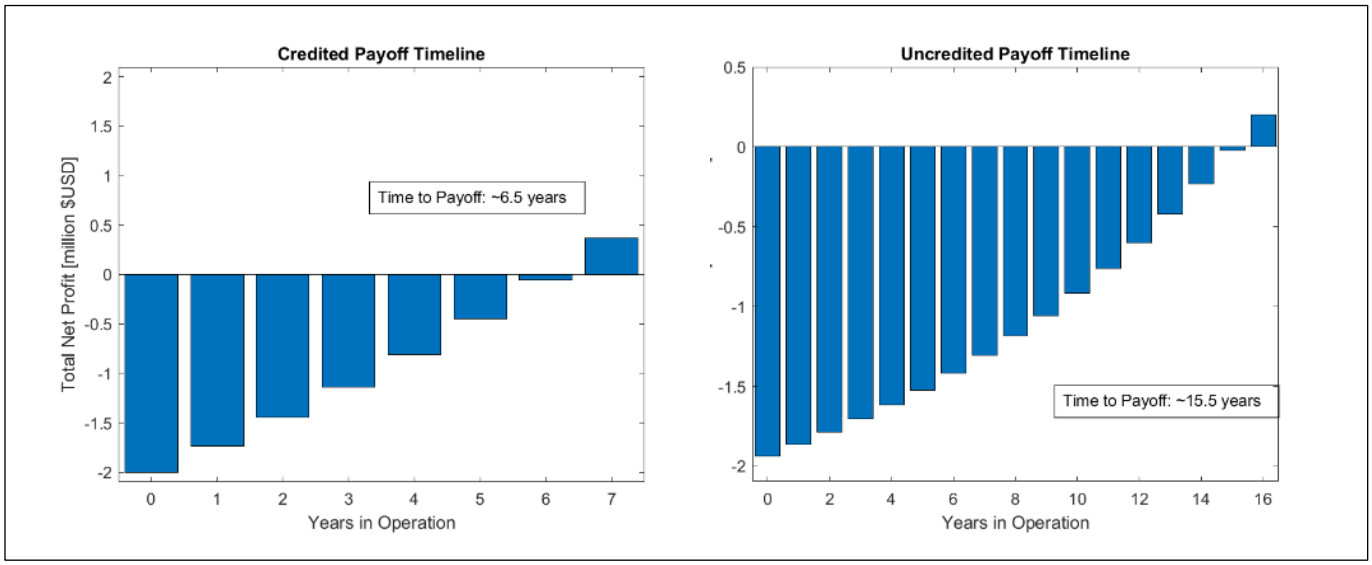


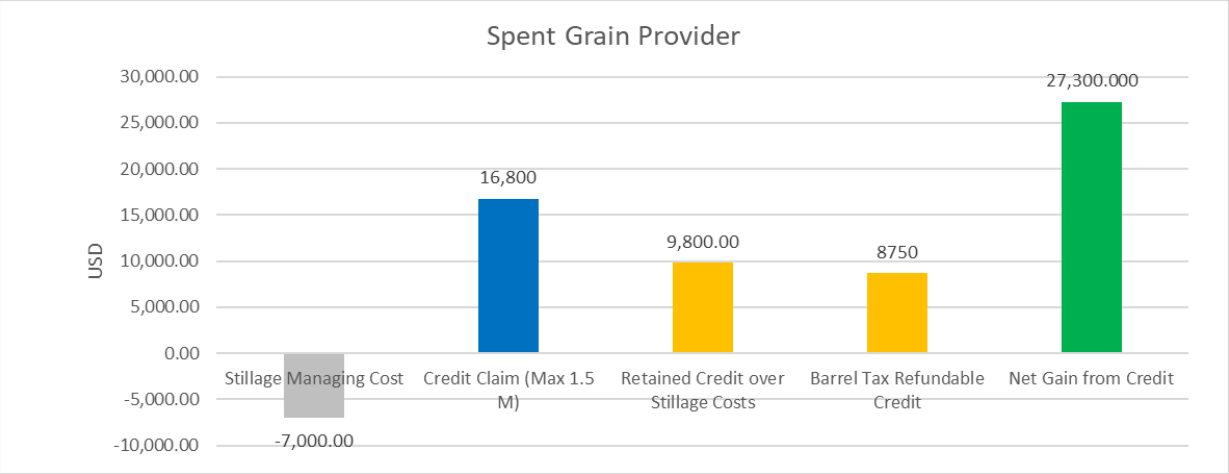
Figure 3: Baseline comparison for biodigester financing, showing 58% payoff timeline reduction of a standard loan. Assumes 8% interest on loan compounded annually, with tipping fees under contract equal to logistic costs, and a low-rate Power Purchase Agreement (PPA) as additional revenue source or additional waste management service fees at same value absent a low-rate PPA. Note that some margin of tipping fee above the logistical cost is standard, and would only further shorten the the payoff timeline for new capital. Developed in MATLAB by Adjunct Associate Austin Gabhart, Georgia Tech.

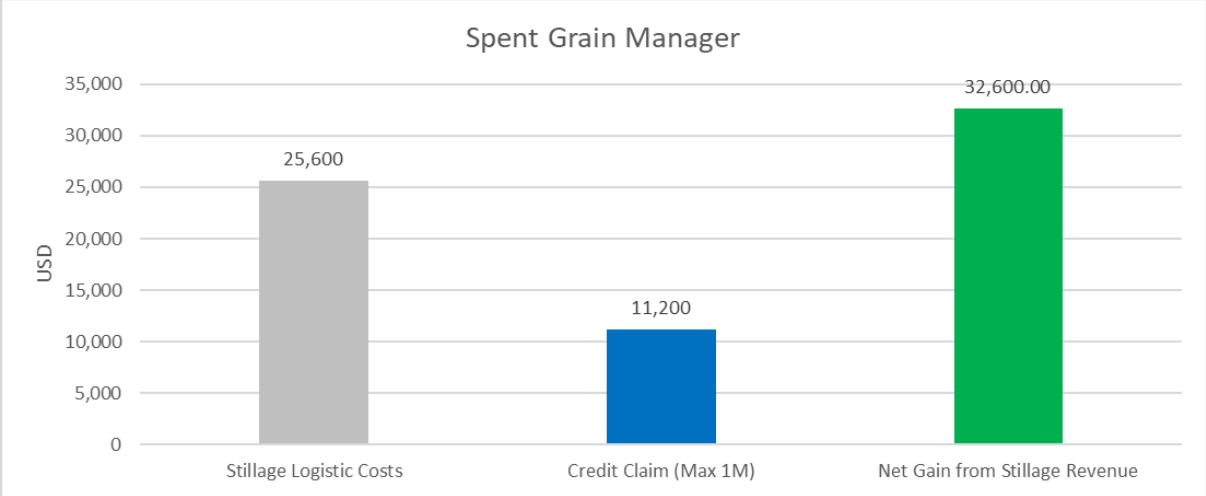
For distillers in Kentucky, as of 2022 barrel filling has outpaced the current amount of nonrefundable credits provided under the distilled spirits credit act – however a refundable credit based on payments made to green stillage uses would solve the issue that income tax liability which credits must be awarded to (due to constitutional rules) is less than property tax liability, and it would be based on the amount of barrel filling as stillage production is directly proportional to bourbon production. Some breweries in need of tax incentives for sustainable growth may observe a similar scenario with spent grain. This legislation is interest-based in the methods of its crafting, and in practice causes more interest-based acts between stakeholders with payment of a third-party to support their interests. All stakeholders experience net-gain from their participation in the program (Exhibit B). In Exhibit B, an example of the model incentive is demonstrated to benefit both stake holders- where the policy would have a net gain of $27, 400 to the distiller and $43,800 to the manager

Exhibit B:

*Amount Transferred (gal):	140,000.00
Truckload Capacity (gal)	5,500
Truckloads per year:	25
Break-even Logistical Cost to Manager/Biodigester per load (USD):	68
Example Tipping Fee for Stilage Management (USD per gallon):	0.05
Credit value per gallon Stillage (USD):	0.08
Use Tier Multiplier	1

Stillage Managing Cost	**Credit Claim** (Ceiling individual cap in legislation)	**Retained Credit over Stillage Costs**	Refundable Credit to Ad-Valorem Ceiling	Net Gain from Credit	**Stillage Logistic Costs to Manager**	**Credit Claim (Max 1M)**	**Manager Net Gain from Stillage Revenue**
-7000	16800	9800	8750	27300	-1,700	11,200	5,300.00





The legislature itself may also benefit from financially from implementing the tax credit program, especially if other tax credit programs be reallocated in support of a

stillage program. Since it is the intention of the credit to provide initial capital to allow self-sustaing In Kentucky, regular economic reports on the distilling industry tend to emphasize the tangential economic impact felt by connected industry. Typically, those reports have focused on the front-end and logistics involved with bourbon and have at times considered DDGS production though the economic benefits from this are arguably marginal. Growth of stillage-based business is a door of opportunity to increase the sphere of economic impact of Kentucky bourbon, and likewise just as grain is a keystone species of the economy spent-grain from brewing and distilling can be an economic "keystone species" of focus to bolster sustainable growth. At a technical level, one can make this observation by considering what networks of management are possible that could receive a certain level of incentive or tier under the program as seen in Figure 3, in addition to other materials exchanged between the industry that may relate to the process of upcycling spent grain. often the case with underfunded state regulatory models on stillage wastes.

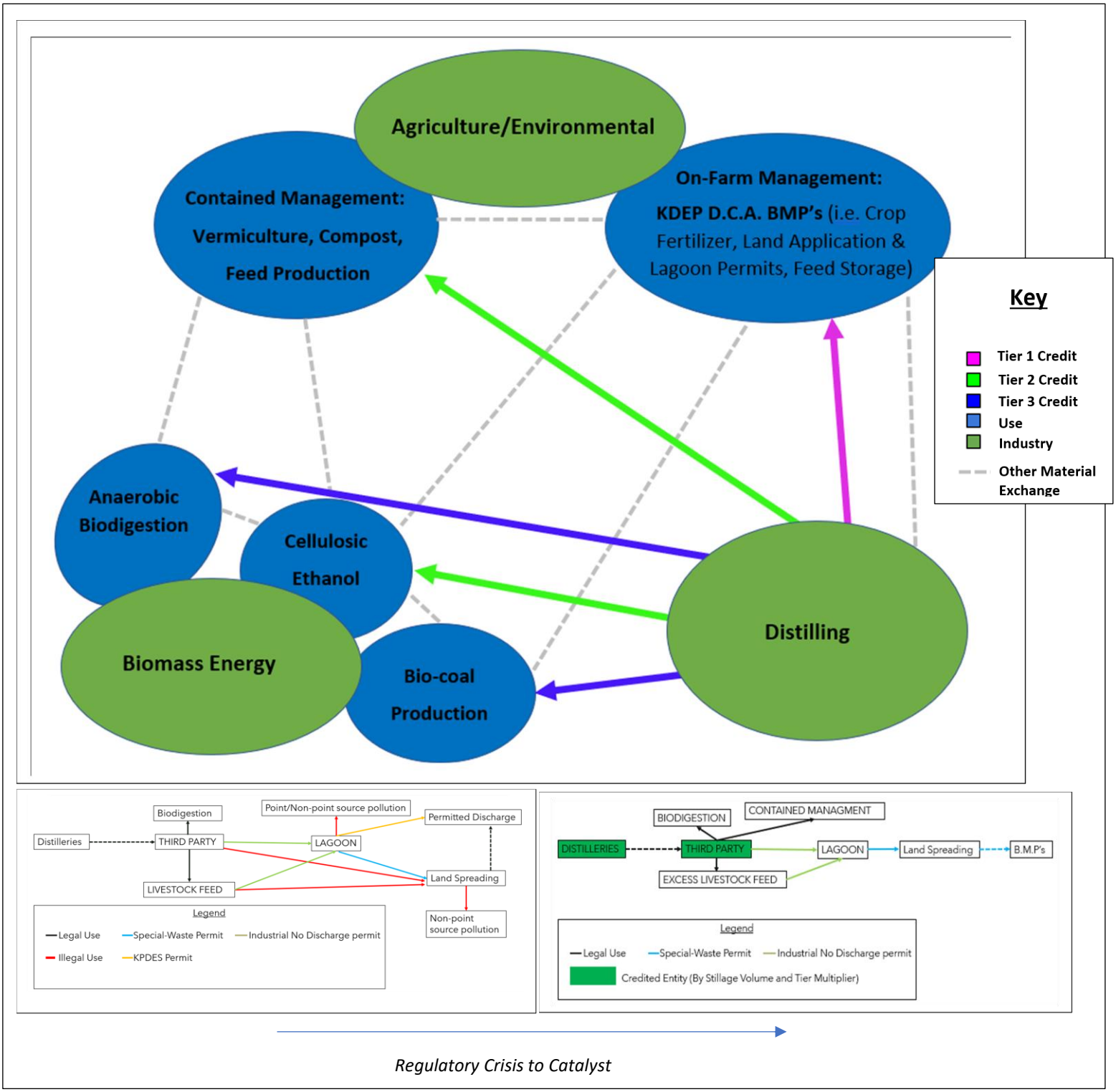


Figure 2: Example spent grain stakeholder web and regulatory model change from crisis to interest-based

Apart from economic benefit, added legal and environmental benefit is found in enacting this spent grain management incentive as it improves on current conditions of non-compliance, aligning economic and environmental prosperity.

EFFICACY & DISCUSSION

In general, crafting this policy solution occurred by identifying clear and workable options to meet the balanced interests of stakeholders to sustainable spent grain management and green business ventures. In some cases, these were defined from stakeholder and professional discussion (Appendix, Table 1) and in others they were defined by considering the real interests behind positions that those stakeholders have expressed. This proposal attempts to solve a complex multi-stakeholder problem by providing a detailed solution that address the policy needs identified, but this is not inflexible because this solution relies on the development of a spent grain tax credit board. The proposed policy is intended to serve as a starting point for administrative rules to govern the rollout of the solution, which can be enacted by stating that the policy is notwithstanding any contrary provisions of law which state that administrative actions cannot expand or contract from the level of deference given to administrative bodies by the legislature. Flexible discretion is the goal of the legislation itself, so that baseline models regarding the price of certain spent grain and value of certain uses are a starting point for the board, which they must change after a minimum period for public comment or else the legislated details become default.

This solution is inherently built as an interest-based proposal to fairly handle a process of internal and external negotiations in the rollout of the incentive program. The board may relate internal negotiations amongst their members to their discussions with stakeholders in the public, and how stakeholders in the public related their negotiations to what they choose to ask of the board. The proposed board is administratively strong, and the solution is adequately tailored with a formula to handle a variety of interests at the administrative level. The best-alternative to no solution to the spent grain issue – pollution and climate risk with a dose of growing susceptibility to an economic bottleneck

on a byproduct often flagged in trade wars - is far weaker than the benefits of passing the policy which administrative provisions can take over. If enacted as-proposed, the CPC policy is designed to dynamically benefit all stakeholders. Aside from missed opportunity, having no introduction of the proposal itself even if that proposal were to fail in committee negotiation only kicks the ball down the road even further by delaying future resolutions with issues on the proposal that the committee may or may not have. That said, the proposal is intentionally designed to avoid those issues and adaptably meet concerns of stakeholders through negotiation on administrative regulations and allowing for a party whose stillage management is not recognized by the program to apply to the board.

For these reasons the CPC proposal is as close to an optimal outcome as possible if an initial idea were presented to a legislative committee. This leaves the question of what a recommended course of action the General Assembly should take to propose and pass the solution. It is strongly recommended that the General Assembly introduce the attached proposal as written by the Legislative Research Commission in the Kentucky House of Representatives Committee on Appropriations & Revenue, as required by the state constitution.

Following introduction, to allow for discussion and negotiation on the measure from stakeholders, it is recommended that the committee follow suit with historic administrative provisions which are provided to allow public comment on the proposal from actual stakeholders. It is logical that this comment be made available to both the Joint Committees on Agriculture, Appropriations and Revenue, and to the board created by the legislation which would oversee the program which also includes a representative of the Governor's Office. Chairs of both Joint Committees should bring testimony before the House and Senate during the interim session, where those testifying would also be given the opportunity to submit comment, and members of the committee may also submit comment to the newly formed board. This is, in fact, a form of negotiation as those comments influence how the board will act and are often crafted from a process of relating internal negotiations to external one from organizations before the committee.

This will help ensure, without a doubt, that the solution takes all interests into account and that stakeholders feel that they have played a role in crafting the solution.

Though often overlooked, this negotiation and feedback process after the passage of the recommended solution is critical to moving this novel policy forward. Even more critical than this, though, is introduction with the commitment to pass the spent-grain tax credit bill. The benefits of doing so may be well beyond what the legislature can immediately comprehend – as may be the case with any incentive legislation that uses this model to place economic drivers behind upcycling waste material that poses an environmental and economic issue.

A new way to solve old problems in the bourbon industry developed by CPC has indeed produced a model for a new way to incentivize upcycling & innovation across the local and regional economies.

This proposal rests freely in the hands of the legislature, industry *and* environment advocates, and most-principally, policymakers, to act. This publication is directed towards the public and the 176th session of the Kentucky General Assembly and those thereafter for implementation of this proposal and continued improvement of CPC co-authored House Bill 627.

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Authors note:

This policy was initially proposed by bipartisan sponsors in the KY General Assembly in 2022, as House Bill 627 and an accompanying Senate Bill (withdrawn due to constitutional restriction on Senate revenue bills). Due to initial clerical errors, a revised version of the bill draft language which follows the provision described by this publication is also published for reference in the Commonwealth Policy Papers housed by the University of Louisville's and first chapter of the Commonwealth Policy Coalition here:

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