AGENDA
LOVELAND CITY COUNCIL STUDY SESSION
TUESDAY, APRIL 12, 2016
CITY COUNCIL CHAMBERS
500 EAST THIRD STREET
LOVELAND, COLORADO

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STUDY SESSION 6:30 P.M. **STUDY SESSION AGENDA**

1. YOUTH ADVISORY COMMISSION
(presenters: Billie Anna Runions, Oliver Byles, Brandon Lindsey, YAC, 60 min.)
ELECTRONIC CIGARETTES AND VAPORIZERS
This is an information only item. The Loveland Youth Advisory Commission is presenting information on e-cigarette and vaporizer use in public areas of Loveland to the City Council. They will inform City Council of issues related to public health and recommend the inclusion of e-cigarette and vaporizers in current smoking code, which prohibits smoking in workplaces, bars, restaurants, public buildings, and no smoking within 15 feet of main entryways.

2. DEVELOPMENT SERVICES **(presenter: Karl Barton, 60 min.)**
CREATE LOVELAND
This is an information only item. The purpose of this study session is to update and familiarize the City Council with the new Comprehensive Plan, Create Loveland, before it is brought to the Council for an adoption hearing. The Plan seen here was subject to extensive review and vetting by the Planning Commission and was unanimously recommended for approval at a Planning Commission public hearing on February 22, 2016. This presentation will provide a high level overview of the Plan features and organization and the process used to develop it.

3. ECONOMIC DEVELOPMENT **(presenter: Marcie Erion, 45 min.)**
BUSINESS ASSISTANCE REQUEST FROM RAYEMAN ELEMENTS INC.
This informational item is an initial discussion of a business assistance request on behalf of Rayeman Elements Inc. (REI). They are looking to locate their production and research operations at the Rocky Mountain Center for Innovation Technology. REI has approached

the City of Loveland about a business assistance package. REI is focused on production of a patented cattle feed product and revolutionary extrusion process that increases the nutritional value of the feed and is transported in a way that minimizes losses. It nutritionally outperforms any feed currently being produced. The technology is cross-cutting and has applications for other types of feed and in other industries.

ADJOURN

AGENDA ITEM: 1
MEETING DATE: 4/12/2016
TO: City Council
FROM: Loveland Youth Advisory Commission (YAC)
PRESENTER: Billie Anna Runions, Member
Oliver Byles, Member
Brandon Lindsey, Member

City of Loveland

TOTAL AGENDA ITEM TIME: 60 minutes

TITLE:
Electronic Cigarettes and Vaporizers in Public Places

SUMMARY:

The Loveland Youth Advisory Commission is presenting information on e-cigarette and vaporizer use in public areas of Loveland to the City Council. They will inform City Council of issues related to public health and recommend the inclusion of e-cigarette and vaporizers in current smoking code, which prohibits smoking in workplaces, bars, restaurants, public buildings, and no smoking within 15 feet of main entryways. Larimer County Department of Health and Environment (LCDHE) has allocated $1,500 for the purpose of policy education and outreach, which may include signs informing the community about the policy.

BACKGROUND:

YAC was approached by LCDHE staff in Fall 2015 to consider working on tobacco related issues in Loveland, CO. YAC discussed growing issues related to e-cigarettes and vaporizers and decided as a commission to gather information about the products, public use, and public opinions. LCDHE partnered with YAC to educate members about potential public health issues related to the products and provided members with best practice guidelines for reducing negative health outcomes, including limiting the use of e-cigarettes and vaporizers in public places. YAC used the information gathered to develop recommendations for City Council to pursue policy change.

A local public opinion survey was administered by LCDHE with guidance from YAC from January 4, 2016-March 15, 2016. A Loveland Colorado Public Opinion Survey Report has been prepared by LCDHE and is submitted as **Attachment A**. YAC is providing City Council with a Policy Brief developed by the Larimer County Department of Health and Environment (LCDHE) **Attachment B,** which details why electronic smoking devices, such as e-cigarettes, are a problem in public place, support for restrictions on public use of the products, and policy recommendations. Supporting documents are provided including a fact sheet from the Centers for Disease Control and Prevention (CDC) **Attachment C**, and a policy statement from The American Academy of Pediatrics **Attachment D**. To support the LCDHE Policy Brief as well as for your review and consideration, YAC has provided a Model for Enforcement of Local Tobacco/Nicotine Policies **Attachment E**. Lastly, the E-cigarette and Vaporizers in Public Places presentation is provided as **Attachment F**.

REVIEWED BY CITY MANAGER:

William D. Cahill

LIST OF ATTACHMENTS:

1. Loveland Colorado Public Opinion Survey Report (**Attachment A**)
2. Larimer County Department of Health and Environment Policy Brief (**Attachment B**)
3. CDC Electronic Nicotine Delivery System Key Facts (**Attachment C**)
4. American Academy of Pediatrics Policy Statement (**Attachment D**)
5. Model for Enforcement of Local Tobacco/Nicotine Policies (**Attachment E**)
6. City Council Study Session Electronic Cigarettes and Vaporizers in Public Places Presentation (**Attachment F**)

Loveland Colorado Public Opinion Survey

E-cigarettes and Vaporizers

Larimer County Health Department administered an online, voluntary, and anonymous survey from January 4th-March 15th, 2016 . The purpose of the survey was to gain information on the public's perceptions, knowledge, and opinions related to electronic delivery devices, commonly referred to as e-cigarettes or vaporizers. There were 377 total responses including 31 respondents under the age of 18 years. Additionally, 154 respondents (41%) reported using e-cigarettes and/or vaporizers. However, this rate of users is not representative of the community, which is closer to 5% of the total population who uses e-cigarettes (Health District of Northern Larimer County, 2013).

Public Support for Policy

62%

Of the total respondents (n=374) support prohibiting the use of e-cigarettes and/or vaporizers inside places like restaurants, bars, workplaces or other buildings open to the public.

85%

Of non-users of e-cigarettes/vaporizers and tobacco (n=196) support prohibiting the use of e-cigarettes and/or vaporizers inside places like restaurants, bars, workplaces or other buildings open to the public.

3 out of 4

Respondents report seeing people in the Loveland area using e-cigarettes and/or vaporizers on some days or every day. In addition, nearly 62% of youth report seeing use in Loveland.

> **It is dangerous to allow it in restaurants and bars, even for adults. The decision to vape in public affects the PUBLIC substantially, Not just the vaper [user].**
>
> -Loveland Public Opinion Survey Respondent

65 %

Nearly 65% of reported non-users of e-cigarettes and/or vaporizers, somewhat or strongly agree with the following statement:
"The aerosol or vapor produced by e-cigarettes and/or vaporizers is harmful to those nearby."

Other Local Data on E-cigarettes and Vaporizers

Although e-cigarettes and vaporizers are relatively new products on the market, local and state organizations have started collecting information about the use of these products in our communities.

Health District of Northern Larimer County

The Health District of Northern Larimer County joins with other local organizations to assess and plan for large health-care needs in the community.They conduct an expansive health survey every two years in Larimer County communities. In 2013, 627 respondents were from Loveland area zip-codes. **Of those respondents, 31 or 4.9% reported using e-cigarettes on some day or everyday.**[1]

Healthy Hearts-University of Colorado Health

Healthy Hearts is an outreach heart health screening and preventive education program offered to adults, elementary, and high school students in northern Colorado.The program conducts a survey of all Thompson School District high school students who participant in their program. **Of the 123 respondents, 2.4% reported using e-cigarettes in the past 30 days.**[2]

Healthy Kids Colorado Survey (Region 2-Larimer County)

The Healthy Kids Colorado Survey is a voluntary survey that collects anonymous, self-reported health information from middle and high school students across Colorado every two years.
In 2013, 14.5% of high school student in Larimer County reported ever trying e-cigarettes. In addition, 27.3% of 12th grade students reported ever trying e-cigarettes.[3]

Sources:
1. http://www.healthdistrict.org/community-health-survey
2. https://www.uchealth.org/Pages/Services/Community-Health/Healthy-Hearts.aspx
3. http://www.chd.dphe.state.co.us/topics.aspx?q=Adolescent_Health_Data

City of Loveland
Youth Advisory Commission

LARIMER COUNTY
COMMITTED TO EXCELLENCE

Electronic Cigarettes and Vaporizers in Public Places

March 2016

Loveland Policy Brief

E-cigarettes and vaping devices are battery-operated products that can deliver nicotine, flavor or other chemicals through an aerosol inhaled by the user and exhaled into the environment.

(See factsheets from the Center for Disease Control (CDC) and the American Academy of Pediatrics (AAP) for details.)

Electronic Smoking Devices - A Problem In Public Places

Secondhand Exposure & Health

Exhaled aerosol from Electronic Smoking Devices (ESDs) may contain nicotine, toxins and cancer causing chemicals that are released into the air and can cause respiratory issues.[1] Many e-liquid flavorings, while approved for ingestion, have not been studied for harmful effects on the lungs or upper airway tissue. Safe when ingested in normal doses does not mean safe when inhaled.[2] There is **no safe level of nicotine** exposure for pregnant women, infants, children or adolescents[3] Exposure to nicotine is harmful to adolescent brain development and may increase vulnerability to addiction.[1]

Smoking Enforcement Concerns

The use of ESDs may make it difficult for employers, business owners and officials to enforce existing smoke-free air laws under the Colorado Clean Indoor Air Act (CCIAA). ESDs used for marijuana and nicotine are indistinguishable and may be discretely used in public areas.

Social Norms

According to the CDC, designated smoke-free public areas are proven strategy for reducing tobacco use rates. In Larimer County adult smoking rates have decreased from 19% in 1995 to 11% in 2013.[4] Additionally, only 9% for youth in Larimer County are current smokers.[5] However, use of electronic products is increasing and public use creates a norm that tobacco and nicotine use is acceptable.[6]

Image source:(Vape360)

"Using electronic products in clean air environments may result in population harm if use of the product enforces the act of smoking as socially acceptable, and if use undermines the effects of smoke-free policies on quitting smoking."

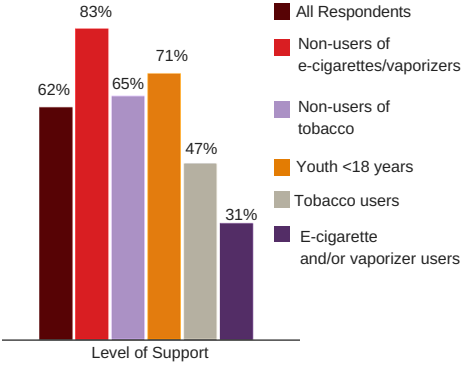
Grana,R; Benowitz, N; Glantz, S. "Background Paper on E-cigarettes," Center for Tobacco Control Research and Education, University of California, San Francisco and WHO Collaborating Center on Tobacco Control, December 2013

1. "Electronic Nicotine Delivery Systems". SECTION ON TOBACCO CONTROL. American Academy of Pediatrics. Nov 2015, 136 (5) 1018-1026; DOI: 10.1542/peds.2015-3222
2. "E-cigarettes and Electronic Nicotine Delivery Systems." American Academy of Pediatrics: Julious B. Richmond Center for Excellence, n.d. Print.
3. "Electronic Nicotine Delivery Systems: Key Facts." Center for Disease Control and Prevention. Office on Smoking and Health, n.d. Print.
4. Health District of Northern Larimer County. Community Health Survey. 2013. Raw data. Larimer County.
5. Colorado Health and Environmental Data (CHED). Health Kids Colorado Survey. 2013. Web. 29 Mar. 2016.
6. "Electronic Nicotine Delivery Systems Key Facts Info-graphic | Open Data | Centers for Disease Control and Prevention." Socrata. N.p., n.d. Web. 29 Mar. 2016.

Public Support- For Restricting Electronic Smoking Devices

From 2016 Loveland Public Opinion Survey

Do you support or oppose prohibiting the use of e-cigarettes/vaporizers inside places like restaurants, bars, workplaces or other buildings open to the public?



CO Vape-free Communities

Source Credit: CBS News 4 Denver

National Health Organizations that support restrictions on ESDs

- American Medical Association (AMA)
- American Heart Association (AHA)
- American Lung Association (ALA)
- National Association of City and County Health Officials (NACCHO)
- American Association for Cancer Research
- American Society of Clinical Oncology
- Campaign for Tobacco Free Kids
- American Academy of Pediatrics
- American Public Health Association
- National Institute for Occupational Safety and Health (NIOSH)

> “Vapor devices/e-cigarettes emit harmful chemicals into the air and need to be regulated in the same manner as tobacco smoking.”

American Society of Heating Refrigeration and Air Conditioning Engineers, 2014 Annual Report

Local Policy Recommendations

The current Smoking In Public Places policy in Loveland meets the minimum standards of the Colorado Clean Indoor Act. These standards are: No smoking in workplaces, bars and restaurants, public buildings, and no smoking 15 feet form main entryways. To strengthen Loveland's current policy:

Restrict use of ESDs in **ALL** public settings in Loveland where traditional smoking is prohibited.

City of Loveland
Youth Advisory Commission

LARIMER COUNTY
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ELECTRONIC NICOTINE DELIVERY SYSTEMS KEY FACTS

Youth use of ENDS continues to rise rapidly in the U.S.

From 2011 to 2014, **past 30-day use** of e-cigarettes increased

9x for high school students (1.5% to 13.4%)

and more than **6x** for middle school students (0.6% to 3.9%)

Nearly 2.5 million U.S. middle and high school students were **past 30-day e-cigarette users** in 2014

including about **1 in 7** high school students.[1]

In 2013, more than **a quarter of a million** (263,000) middle and high school students who **had never smoked cigarettes had ever used e-cigarettes**.[2]

Most adult ENDS users also smoke conventional cigarettes, which is referred to as "dual use."

In 2012/2013, 1.9% of adults were **past 30 day e-cigarette users**, including **9.4% of conventional cigarette smokers**.[3]

Among adult **past 30 day e-cigarette users**, **76.8% were also current cigarette smokers** (i.e., "dual users") in 2012/2013.[3]

Nicotine poses dangers to pregnant women and fetuses, children, and adolescents. Youth use of nicotine in any form, including ENDS, is unsafe.[4,5]

- Nicotine is highly addictive.[4]
- Nicotine is toxic to developing fetuses and impairs fetal brain and lung development. [4,5]
- Poisonings have resulted among users and non-users due to ingestion of nicotine liquid, absorption through the skin, and inhalation.[6] E-cigarette exposure calls to poison centers increased from one per month in September 2010 to 215 per month in February 2014, and over half of those calls were regarding children ages 5 and under.[6]
- Because the adolescent brain is still developing, nicotine use during adolescence can disrupt the formation of brain circuits that control attention, learning, and susceptibility to addiction. [5]
- According to the Surgeon General, the evidence is already sufficient to warn pregnant women, women of reproductive age, and adolescents about the use of nicotine containing products such as smokeless tobacco, dissolvables, and ENDS as alternatives to smoking.[4]

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention

www.cdc.gov/tobacco

CS2606251-B

Any combusted tobacco use at any age is dangerous.

The **burden of death and disease** from tobacco use in the U.S. is overwhelmingly caused by cigarettes and other combusted tobacco products.[4]

There is **no safe level** of exposure to secondhand tobacco smoke.[7]

In order for adult smokers to benefit from ENDS, they must completely quit combusted tobacco use. Smoking even a few cigarettes per day is dangerous to your health.

RIP

Smokers who cut back on cigarettes by using ENDS, but who don't completely quit smoking cigarettes, aren't fully protecting their health:

- Smoking just **1- 4 cigarettes a day doubles the risk** of dying from **heart disease.**[8]
- **Heavy smokers** who reduce their cigarette use by half still have a very high **risk for early death**.[9]

Benefits of quitting smoking completely:

- **Heart disease risk is cut in half 1 year after quitting** and continues to drop overtime.[4]
- Even **quitting at age 50 cuts your risk in half** for early death from a smoking-related disease.[4]

ENDS are not an FDA-approved quit aid.

Currently the **evidence is insufficient** to conclude **that ENDS are effective for smoking cessation.**

Seven medicines are approved by the FDA for smoking cessation, and are proven safe and effective when used as directed.[10]

ENDS aerosol is NOT harmless "water vapor" and is NOT as safe as clean air.[18]

- ENDS generally emit lower levels of dangerous toxins than combusted cigarettes. However, in addition to nicotine, **ENDS aerosols can contain heavy metals, ultrafine particulate, and cancer-causing agents like acrolein.**[11]
- ENDS aerosols also contain propylene glycol or glycerin and flavorings.
- Some ENDS manufacturers claim that the use of propylene glycol, glycerin, and food flavorings is safe because they meet the FDA definition of "Generally Recognized as Safe" (GRAS). However, **GRAS status applies to additives for use in foods, NOT for inhalation**. The health effects of inhaling these substances are currently unknown.

ENDS are aggressively marketed using similar tactics as those proven to lead to youth cigarette smoking.

Although the advertisement of cigarettes has been banned from television in the United States since 1971, ENDS are now marketed on television and other mainstream media channels.[2]

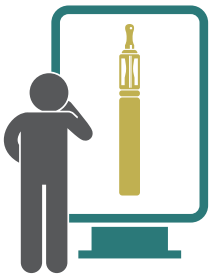
Spending on advertising of ENDS tripled each year from 2011 to 2013.[12,13] Sales of ENDS also increased dramatically over a similar period.[14]

ENDS marketing has included **unproven claims of safety** and use for smoking cessation, and statements that they are **exempt from clean air policies that restrict smoking**.[4] These messages could:

- Promote situational substitution of ENDS when smokers cannot smoke cigarettes, rather than complete substitution of ENDS for cigarettes.
- **Undermine clean indoor air standards**, smokefree policy enforcement, and tobacco-free social norms.

In a randomized controlled trial, adolescents who viewed e-cigarette TV advertisements reported a significantly greater likelihood of future e-cigarette use compared with the control group. They were also more likely to agree that e-cigarettes can be used in places where smoking is not allowed.[15]

Some ENDS companies are using techniques similar to those used by cigarette companies that have been shown in the 2012 Surgeon General's Report to increase use of cigarettes by youth, including: candy-flavored products; youth-resonant themes such as rebellion, glamour, and sex; celebrity endorsements; and sports and music sponsorships.[13,16]



Visual depictions of ENDS use in advertisements may serve as smoking cues to smokers and former smokers, **increasing the urge to smoke and undermining efforts to quit or abstain** from smoking.[17]

Given the currently available evidence on ENDS, several policy levers are appropriate to protect public health:

- **Prohibitions on marketing or sales** of ENDS that result in youth use of any tobacco product, including ENDS.
  - **States laws prohibiting sales of ENDS to minors** that feature strong enforcement provisions and allow localities to develop more stringent policies are more likely to help prevent youth access.[18]
- **Prohibitions on ENDS use in indoor areas** where conventional smoking is not allowed could:[18]
  - **Preserve clean indoor air standards** and protect bystanders from exposure to secondhand ENDS aerosol.
  - **Support tobacco-free norms**.
- When addressing potential public health harms associated with ENDS, it is important to simultaneously **uphold and accelerate strategies found by the Surgeon General to prevent and reduce combustible tobacco use**, including tobacco **price increases**, comprehensive **smoke-free laws**, high-impact media campaigns, barrier-free cessation treatment and services, and comprehensive **statewide tobacco control programs**.[4,18]

References

1 Centers for Disease Control and Prevention. Tobacco Use Among Middle and High School Students — United States, 2011–2014. *MMWR* 64(14);381-385.

2 Bunnell, Agaku, Arrazola, Apelberg, Caraballo, Corey, Coleman, Dube, and King. Intentions to smoke cigarettes among never-smoking U.S. middle and high school electronic cigarette users, National Youth Tobacco Survey, 2011 -2013 *Nicotine Tob Res.*

3 King, Patel, Nguyen, and Dube. Trends in Awareness and Use of Electronic Cigarettes among U.S. Adults, 2010 -2013 *Nicotine Tob Res* ntu191 first published online September 19, 2014 doi:10.1093/ntr/ntu191

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18 Centers for Disease Control and Prevention. State Laws Prohibiting Sales to Minors and Indoor Use of Electronic Nicotine Delivery Systems — United States, November 2014. *MMWR* 63(49);1145-1150.

POLICY STATEMENT Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of all Children

American Academy of Pediatrics

DEDICATED TO THE HEALTH OF ALL CHILDREN™

Electronic Nicotine Delivery Systems

Section on Tobacco Control

Electronic nicotine delivery systems (ENDS) are rapidly growing in popularity among youth. ENDS are handheld devices that produce an aerosolized mixture from a solution typically containing concentrated nicotine, flavoring chemicals, and propylene glycol to be inhaled by the user. ENDS are marketed under a variety of names, most commonly electronic cigarettes and e-cigarettes. In 2014, more youth reported using ENDS than any other tobacco product. ENDS pose health risks to both users and nonusers. Nicotine, the major psychoactive ingredient in ENDS solutions, is both highly addictive and toxic. In addition to nicotine, other toxicants, carcinogens, and metal particles have been detected in solutions and aerosols of ENDS. Nonusers are involuntarily exposed to the emissions of these devices with secondhand and thirdhand aerosol. The concentrated and often flavored nicotine in ENDS solutions poses a poisoning risk for young children. Reports of acute nicotine toxicity from US poison control centers have been increasing, with at least 1 child death reported from unintentional exposure to a nicotine-containing ENDS solution. With flavors, design, and marketing that appeal to youth, ENDS threaten to renormalize and glamorize nicotine and tobacco product use. There is a critical need for ENDS regulation, legislative action, and counter promotion to protect youth. ENDS have the potential to addict a new generation of youth to nicotine and reverse more than 50 years of progress in tobacco control.

DEFINITIONS

- Secondhand aerosol: emissions from electronic nicotine delivery systems (ENDS) that are discharged into the surrounding environment with ENDS use, both directly from the ENDS and exhaled from the lungs of the user.
- Thirdhand aerosol: ENDS emissions that remain on surfaces and in dust after ENDS use, which can be reemitted into the gas phase or react with oxidants in the environment to yield secondary pollutants.
- ENDS alternate names: electronic cigarettes, e-cigarettes, e-cigs, electronic cigars, e-cigars, electronic hookah, e-hookah, hookah sticks, personal vaporizers, mechanical mods, vape pens, and vaping devices.

BACKGROUND

ENDS, including electronic cigarettes (e-cigarettes), are handheld devices that produce an aerosol from a solution typically containing nicotine,

FREE

www.pediatrics.org/cgi/doi/10.1542/peds.2015-3222

DOI: 10.1542/peds.2015-3222

PEDIATRICS (ISSN Numbers: Print, 0031-4005; Online, 1098-4275).

flavoring chemicals, and carrier solvents such as propylene glycol and vegetable glycerin (glycerol) for inhalation by the user. Wide variability exists in ENDS terminology, product design, and engineering. For the purposes of the current policy statement, the term ENDS encompasses devices that are typically battery operated and produce emissions for inhalation. Alternate names for these products include electronic cigarettes, e-cigarettes, e-cigs, electronic cigars, electronic hookah, e-hookah, hookah sticks, personal vaporizers, mechanical mods, vape pens, and vaping devices.

Although commonly referred to as a vapor, the emission from ENDS is most accurately referred to as an aerosol, which is a suspension of fine particles in a gas.[1] Despite variations in terminology, ENDS products generally have several common components that include a flow sensor, aerosol generator, battery, and solution storage area.[2] When a user draws a breath (or "vapes") from the device, a flow sensor detects the change in pressure and activates the aerosol generator. The generator draws the solution from the storage area and heats and/or mechanically disperses the solution, creating an aerosol. This aerosol is inhaled by the user, who then exhales it. Nonusers can be exposed to the emissions both from the aerosol that is exhaled as well as from the aerosol that is generated from the device. Some ENDS products have a light-emitting diode that simulates the lit end of a conventional cigarette.

There are more than 460 different brands of ENDS, which vary considerably in price, quality, and design.[3,4] ENDS can be purchased in various retail outlets, including vendors that sell tobacco, "vape" shops, mall kiosks, gas stations, convenience stores, grocery stores, and pharmacies, as well as through Internet vendors. ENDS can be disposable or reusable; the reusable ENDS products have a rechargeable battery.[4] The ENDS solution storage containers also vary widely, ranging from prefilled cartridges to tank-style, large refillable cartridges.[4,5] Although many of the early "first-generation" ENDS were designed to resemble conventional cigarettes, newer ENDS models largely do not and may resemble other common objects such as a pen or flashlight.

EPIDEMIOLOGY OF YOUTH ENDS USE

ENDS use has increased dramatically among youth. The National Youth Tobacco Survey (NYTS) began surveying ENDS use in 2011, asking questions only about e-cigarettes. Ever use (defined by the NYTS as having ever tried an e-cigarette) among middle school students increased from 1.4% in 2011 to 3% in 2013.[6,7] Current use (defined by the NYTS as use of an e-cigarette at least 1 day in the past 30 days) among middle school students was 0.6% in 2011 and increased to 3.9% in 2014, a 650% increase.[7,8] Among high school students, ever use increased from 4.7% in 2011 to 11.9% in 2013, and current use increased from 1.5% in 2011 to 13.4% in 2014, an 890% increase.[6–9] Other surveys of high school students have found higher current use at 17% to 18%, with ever use as high as 29%.[10,11] The 2014 NYTS and Monitoring the Future survey both documented for the first time that more teenagers used e-cigarettes in the past 30 days than any other tobacco products, including conventional cigarettes.[8,11] ENDS use has been documented as highest among male subjects, non-Hispanic white youth, and Hispanic youth.[8,12]

A 2013 survey of high school students found that e-cigarette-only users had fewer social and behavioral risk factors than conventional cigarette users, raising concern that ENDS are attracting youth who may not otherwise have used tobacco products.[10] In addition, high levels of dual use of ENDS and conventional cigarettes have been noted in both adults[13,14] and youth.[6,9,10,12,15] Among youth, self-reported e-cigarette use was also associated with higher odds of ever or current conventional cigarette smoking.[15] Compared with nonusers, youth who used e-cigarettes perceived them as healthier than cigarettes[10]; however, youth using e-cigarettes were less likely to achieve abstinence from conventional cigarettes.[15]

Youth exposure to ENDS secondhand and thirdhand aerosol has also potentially increased with the increase in adult ENDS use. The percentage of e-cigarette ever use in adults rose from 3.3% in 2010 to 8.5% in 2013, and current use increased from 1% in 2010 to 2.6% in 2013.[13] Adult conventional cigarette smokers exhibited the largest growth in ever use of ENDS, increasing from 9.8% in 2010 to 36.5% in 2013.

ENDS MARKETING AND SALES

The increasing awareness, sales, and use of ENDS is being fueled by the marketing and promotion of ENDS in the media, including television, movies, video games, social media, the Internet, radio and print media, billboards, and point-of-sale advertising, as well as by celebrity role models. Advertisements and promotional efforts in broadcast media have been shown to promote youth initiation and progression of tobacco use.[16] ENDS companies have marketed their products with claims of being "healthier" and "safer" than conventional cigarettes; these claims have not been scientifically validated.[3,17] There are also unsubstantiated claims that ENDS can be used to "smoke anywhere" and both explicit and implicit claims that ENDS are smoking cessation aids (currently unapproved by the US Food and Drug Administration [FDA]).

Among all media outlets, ENDS advertising expenditures increased from $6.4 million in 2011 to $18.3

million in 2012, with the majority spent on magazine and television advertisements.[18] Although tobacco advertisements on television have been legally banned since 1971 because of the Public Health Cigarette Smoking Act, there are no current regulations in place limiting ENDS advertisements.[19] Although the current generation of children and adolescents had not previously been exposed to tobacco advertisements on television, youth exposure to television advertisements for ENDS increased by 256% from 2011 to 2013.[20] In 2013, 80% of US youth aged 12 to 17 years were exposed to an average of 13 ENDS advertisements over the 1-year period. Driven in part by the significant increase in marketing and promotion, ENDS sales represented a billion-dollar industry in 2013, with some forecasters predicting they will eventually surpass sales for conventional cigarettes.[21]

ENDS SOLUTION COMPONENTS

The solutions used in ENDS products (often referred to as e-liquid or e-juice) can be purchased in prepackaged cartridges or by volume to fill a refillable cartridge. ENDS solutions are also available through Internet vendors, in stores, and places where ENDS products are sold. In addition to concentrated nicotine, components of the ENDS solutions generally include flavoring chemicals and carrier solvents, such as propylene glycol and glycerol.[1] Currently, there are no federal quality standards to ensure the accuracy of ENDS solution constituents as advertised or labeled. The refillable cartridges allow the user to deliver other psychoactive substances, including marijuana.[4]

In addition to nicotine, numerous toxicants and carcinogens harmful to human health have been found in ENDS solutions, including aldehydes, tobacco-specific nitrosamines, metals, tobacco alkaloids, and polycyclic aromatic hydrocarbons.[1,22,23] These quantitative and qualitative studies illustrate that there are additional components in ENDS solutions that are unknown to users.

Nicotine is the major psychoactive component of an ENDS solution.[1] In a study of 35 ENDS cartridges and refill solutions, there were substantial discrepancies (as much as 89%) between the label and the actual nicotine content.[24] The reported nicotine concentration in ENDS solutions ranges from 0 to 36 mg/mL with cartridges that vary in size.[5,17] In comparison, a single conventional cigarette contains from 10 to 30 mg of nicotine, although the absorbed nicotine yield for a user is far less, from 0.05 to 3 mg per cigarette.[25,26] The user's actual nicotine exposure is affected by many factors, including the delivery system, nicotine pharmacokinetics, and individual consumption behavior.[27,28]

More than 7760 unique flavors of ENDS solutions are advertised, the majority of which are confectionary in nature and appealing to children.[3,29] Popular options include fruit, candy, and dessert flavors such as "Belgian waffle" and chocolate.[3,17] The most commonly offered flavors are tobacco and menthol, which are offered by 93% and 92%, respectively, of ENDS brands.[3] Because cigarettes with candy and fruit flavoring encourage youth experimentation, regular use, and addiction,[30] flavorings (other than menthol) have been banned in conventional cigarettes since the Family Smoking Prevention and Tobacco Control Act of 2009. Although the flavoring chemicals used in ENDS solutions have been cited as "food grade" and "generally recognized as safe," under FDA guidelines, this certification relates only to ingestion, not inhalation.[29] A study of ENDS solutions found that many of the flavoring chemicals contain aldehydes (known respiratory irritants) in sufficient concentrations to be of toxicological concern.[29]

The carrier solvents propylene glycol and vegetable glycerin (glycerol) are used in ENDS solutions to produce an aerosol that, when heated, simulates conventional cigarette smoke.[1] Although these carrier solvents are used in other settings, insufficient data exist on the health effects of repeated long-term inhalation and exposure to these solvents.[31]

ENDS SECONDHAND AND THIRDHAND AEROSOL

The aerosol generated by ENDS is inhaled and then exhaled by the user, and some of the generated aerosol may be directly discharged into the surrounding environment. This aerosol, also referred to as secondhand aerosol or secondhand vapor, can be inhaled by bystanders in a manner similar to secondhand cigarette smoke. Although ENDS advertisers often claim the secondhand aerosol is "harmless water vapor," these claims are false: known harmful toxicants and carcinogens have been found in ENDS emissions.[4] These include polycyclic aromatic hydrocarbons[32] as well as nicotine, volatile organic compounds, ultrafine particles, and particulate matter.[32–34] Metal and silicate particles, some of which occur at higher levels than in conventional cigarettes, have also been detected in ENDS aerosol.[35,36]

Thirdhand aerosol, as with thirdhand smoke, is the residual aerosol that remains on surfaces and in dust after ENDS use; this residual may react with oxidants in the environment to yield secondary pollutants or be reemitted into the gas phase.[37] Because nicotine on surfaces has been shown to be increased after ENDS use,[38] thirdhand aerosol is another potentially harmful unintentional source of nicotine exposure for youth. ENDS use exposes nonusers, including at-risk populations such as children and pregnant women, to nicotine and other harmful toxicants from secondhand and thirdhand aerosol.

In laboratory studies, neonatal mice exposed to the aerosol from a nicotine-containing ENDS solution had detectable levels of plasma cotinine, a metabolite of nicotine.[39] The mice exposed to the ENDS solution containing nicotine had decreased weight gain and impaired postnatal lung growth compared with mice exposed to room air. ENDS solutions have also been shown to be cytotoxic to human embryonic stem cells.[40] These studies raise concern for harm from in utero exposure and neonatal exposure to nicotine-containing ENDS solution.

THE EFFECTS OF NICOTINE ON THE DEVELOPING BRAIN

Nicotine is highly addictive and is the primary psychoactive component causing addiction in tobacco products.[25] Nicotine has neurotoxic effects on the developing brain.[41,42] In early adolescence, development of executive function and neurocognitive processes in the brain has not fully matured. Adolescents are more likely to engage in experimentation with substances such as cigarettes, and they are also physiologically more vulnerable to addiction.[43] Particularly in adolescence, nicotine also has an effect on the brain as a "gateway" drug for cocaine and other illicit drugs.[44]

UNINTENTIONAL ENDS EXPOSURE AND TOXICITY

Nicotine is derived from the tobacco plant and, in addition to being highly addictive, is toxic to humans.[25] Nicotine is well absorbed from the respiratory tract, mucosal surfaces, skin, and intestines; thus, nicotine exposure can occur from inhaling, ingesting, or coming in physical contact with a nicotine-containing ENDS solution.[25,45] Although symptoms of acute nicotine toxicity are generally mild and resolve within 12 hours with no treatment, large exposures can be fatal.[46] Symptoms of acute nicotine toxicity are similar to those in a nicotine-naive user and include fine tremor, nausea, tachycardia, and elevated blood pressure.[25] Severe poisonings generally have a biphasic reaction. Early symptoms occur within the first hour of exposure and are characterized by cholinergic excess (increased salivation, vomiting, and diaphoresis); other signs may include cardiac dysrhythmias, seizures, and muscle fasciculations. Late symptoms of severe nicotine poisoning occur between 0.5 and 4 hours and include hypotension, bradycardia, lethargy, and respiratory failure secondary to neuromuscular blockade.

Severe nicotine toxicity in children has been reported with nicotine doses as low as 2 mg.[25] ENDS solutions have been advertised to contain as much as 36 mg/mL of nicotine (3.6%).[17] The oral lethal dose of nicotine by body weight that is estimated to kill 50% of adults is projected at between 0.8 and 13 mg/kg.[25,46] Using the mid-range estimate (6 mg/kg) of a lethal dose of nicotine, an ingestion of the contents of 2 mL (<0.5 teaspoon) of an ENDS concentrated nicotine solution could be fatal to the average 12-kg, 20-month-old child. There is significant risk of pediatric morbidity and mortality with the current unregulated packaging and volume of nicotine concentrations available in ENDS solutions.

There has been an increase in unintentional exposures and poisonings from ENDS in the United States, including inhalations, eye and skin exposures, and ingestions. Calls to poison control centers for ENDS exposures increased from 1 exposure call per month in September 2010 to 215 calls in February 2014.[45] The majority of ENDS exposures were among children 0 to 5 years of age, and 57.8% of ENDS exposures produced adverse health effects, most commonly vomiting, nausea, and eye irritation.[45,47] As of publication date, there has been 1 reported child death in the United States from ingestion of a nicotine-containing ENDS solution.[48] There has also been 1 adult death in the United States from an intentional injection of a nicotine-containing ENDS solution.[47] In addition, the lithium-ion batteries used in ENDS have reportedly caused explosions and fires, most commonly while the battery is charging. The US Fire Administration has cautioned that, because of the shape and construction of ENDS, battery failure may be more likely to result in an explosion that is propelled like a "flaming rocket."[49]

DATA ON USE OF ENDS FOR SMOKING CESSATION

ENDS products have been promoted by some manufacturers, either explicitly or implicitly, as a smoking cessation aid, although they are not approved by the FDA as a smoking cessation product.[3,17] There have been limited studies on its use as a medical device. As of publication date, 1 randomized controlled clinical trial has compared nicotine-containing ENDS, nicotine-replacement therapy (21-mg nicotine patches), and placebo (no nicotine) ENDS.[50] Six-month cessation rates were low overall, and no statistically significant difference was found among the 3 groups. Notable limitations to the study included inadequate behavioral support for all groups and poor participant adherence with study treatments, which was particularly low in the nicotine patch group. Because these results are from a single study, they should be interpreted with caution, considering the low overall tobacco cessation rates in all 3 study groups. An earlier meta-analysis of tobacco dependence treatments (which did not include ENDS) found that the nicotine patch was effective for the treatment of tobacco dependence, with cessation rates of 23% with the nicotine patch alone.[51] Other population-based studies have found no association between ENDS use and successful cessation of conventional cigarette use.[4,52] Overall, there is insufficient evidence to recommend the use of ENDS for smoking cessation.

FEDERAL AND STATE ENDS REGULATION

Although federal regulations ban the sale of conventional cigarettes to youth aged <18 years, there are no current federal age restrictions for purchasing ENDS or ENDS products. The American Academy of Pediatrics (AAP) recommends 21 years as the minimum age of purchase for all tobacco products.[53] In April 2014, the FDA issued a draft regulation that would extend the agency's tobacco authority to cover the sale and distribution of ENDS and other tobacco products similar to conventional cigarettes. Final action on this regulation is pending. Federal regulations on the content, labeling, and packaging of ENDS and ENDS solutions also do not exist as of publication date. Federal legislation is pending that would give the Consumer Product Safety Commission the authority to require child-resistant packaging on liquid nicotine containers sold to consumers. Some states have already enacted legislation mandating child-resistant packaging for ENDS solutions.

The majority of states have enacted laws prohibiting ENDS sales to minors, and a few states have enacted comprehensive laws that prohibit ENDS use in private worksites, restaurants, and bars.[54] Updated information on state ENDS laws is available by contacting the AAP Division of State Government Affairs at stgov@aap.org. There is no current federal regulation of Internet ENDS sales. No federal laws prevent ENDS and ENDS solutions from being purchased by anyone over the Internet, regardless of age.

RECOMMENDED ACTIONS FOR THE PEDIATRICIAN

1. Pediatricians should screen for ENDS use and provide prevention counseling in clinical practice.

a. Screen children and adolescents, parents, and caregivers for ENDS use.

Screening for ENDS use and exposure should be incorporated into the screening for tobacco use. Opportunities to screen include health supervision visits and visits for diseases that may be caused or exacerbated by tobacco smoke exposure, including ENDS secondhand or thirdhand aerosol. Because ENDS products vary widely and are referred to by many names, ask about use of these products by using specific names (eg, electronic cigarettes, e-cigarettes, e-cigs, electronic cigars, electronic hookah, e-hookah, hookah sticks, personal vaporizers, mechanical mods, vape pens, vaping devices). For more information (including an ENDS fact sheet), please refer to the AAP Julius B. Richmond Center of Excellence ENDS Web page (http://www2.aap.org/richmondcenter/ENDS.html).

b. Counsel children and adolescents about the harms of ENDS and the importance of remaining a nonuser of ENDS and all nicotine-containing products.

As part of tobacco use prevention counseling, pediatricians should include prevention counseling about the known hazards of ENDS and the importance of not initiating use of any nicotine-containing product. Personally relevant messages may include the severity and rapid development of nicotine addiction and health effects from ENDS use, lack of regulation of ENDS products and solutions, and the contaminants in the products.

2. ENDS use should not be recommended as a treatment product for tobacco dependence.

No current evidence supports the efficacy or safety of ENDS as a tobacco dependence treatment product. Tobacco-dependent parents, caregivers, and adolescents should be offered behavioral counseling and support and should be educated on, offered, and/or referred to evidence-based, FDA-approved, tobacco dependence treatment medications as appropriate for the individual's severity of tobacco dependence and readiness to quit.[51]

3. Parents, caregivers, and adolescents who use ENDS should be offered or referred for tobacco cessation counseling and FDA-approved tobacco dependence pharmacotherapies appropriate to their level of addiction and readiness to change.

For further information on tobacco cessation counseling and resources for adults and youth, please refer to the following:

- Clinical Practice Policy to Protect Children From Tobacco, Nicotine, and Tobacco Smoke[55]
- Treating Tobacco Use and Dependence (http://www.ahrq.gov/professionals/clinicians-providers/guidelines-recommendations/tobacco/index.html)
- Clinical Effort Against Secondhand Smoke Exposure (http://www2.massgeneral.org/ceasetobacco/)
- American College of Chest Physicians Tobacco Dependence Treatment ToolKit (http://tobaccodependence.chestnet.org/)

4. Pediatricians should recommend to ENDS users that children should avoid contact with ENDS and ENDS solutions as well as secondhand and thirdhand aerosol exposure.

a. Counsel parents and caregivers that ENDS and ENDS solutions should be stored in child-resistant packaging and out of the reach of children.

Although some states have enacted legislation mandating child-resistant packaging, no current federal regulations exist for child-resistant packaging for ENDS and ENDS solutions. Although counseling should be targeted to prevention of ENDS use, if there are household users of ENDS, pediatricians should counsel parents and caregivers about child-resistant packaging, handling, and storage.

b. Counsel parents and caregivers about strategies to reduce exposure to ENDS aerosol, such as instituting bans on ENDS use in the home and car.

The best protection from exposure to ENDS aerosol is for parents and caregivers to not use ENDS. If that is not possible, pediatricians should recommend ENDS-free policies for their home and car.

5. Pediatricians should be familiar with symptoms of acute nicotine poisoning and consider acute nicotine poisoning from ENDS solutions when treating a child with symptoms consistent with acute nicotine poisoning unexplained by other etiologies.

Although most exposures will not require treatment, medical management of severe acute nicotine ingestion is largely symptomatic and supportive. If an exposure occurs or there is concern for exposure, the American Association of Poison Control Centers (1-800-222-1222) should be contacted.

PUBLIC POLICY RECOMMENDATIONS

1. Reduce youth access to ENDS.

a. Ban the sale to and use of ENDS for children and youth younger than 21 years.

Banning the sale of ENDS to youth younger than 21 years will decrease youth access and the potential for nicotine addiction. The AAP recommends 21 years as the minimum legal age of purchase for all tobacco products.

b. Ban Internet sales of ENDS and ENDS solutions.

Prohibition of Internet sales can help regulate the ability to restrict the sale of ENDS to youth. Internet sales of ENDS and ENDS solutions can easily be accessed by minors and used to evade local tobacco control regulations and taxes.

2. Reduce youth demand for ENDS.

a. **Ban all flavors in ENDS.**

Because flavors have been shown to promote tobacco product use among youth,[30] flavoring chemicals, including menthol, should be banned in all ENDS products and solutions. Flavoring chemicals attractive to youth also have the potential to increase risk of ingestion of the ENDS solution by young children.

3. Ban advertising of ENDS in media/Internet/point-of-sale settings that can be viewed by youth.

ENDS advertisements in media, including television, radio and print, billboards, signage, Internet, and point-of-sale (advertisements located where ENDS are sold), promote a positive image of ENDS and encourage youth purchase and use of ENDS. Any promotional activities that can be accessed by children and/or adolescents should be considered advertising to youth.

4. Restrict depictions of ENDS and ENDS use in movies, television shows, and video games. Require any movie, television show, or video game with a depiction of ENDS or ENDS use to have an adult rating.

Tobacco advertisements and promotional efforts in media promote youth tobacco initiation and progression of smoking. Movies, television shows, and video games that depict ENDS or ENDS use should be rated a minimum of R, TV-MA, or Mature, respectively.

5. Protect youth from harms of involuntary ENDS, ENDS solution, and ENDS aerosol exposure.

a. Protect youth and other nonusers from secondhand and thirdhand aerosol exposure.

Because ENDS secondhand and thirdhand aerosol contains nicotine and other harmful toxicants, ENDS use should be prohibited in all public spaces. ENDS use should also be prohibited in all locations where children and youth are cared for, learn, work, and play, including workplaces, restaurants, health care facilities, child care settings, schools, dormitories, entertainment venues, parks, athletic facilities, shopping malls, restaurants, and leisure facilities. School and college campuses should prohibit the sale and use of ENDS. Prohibitions of ENDS should be included as part of tobacco-free and smoke-free laws and policies.

b. Protect children from unintentional nicotine exposure and poisonings.

i. The size of ENDS concentrated nicotine solution prefilled cartridges and containers should be limited to amounts that would not be lethal to a young child if ingested.

ii. ENDS solutions containing nicotine should be dispensed in child-resistant packaging.

iii. Child-resistant caps and other packaging technologies should be used to reduce the risk of exposure to children, including those that restrict the rate and amount of flow of liquid nicotine from a container.[56]

c. Tax ENDS at the same rate as conventional cigarettes.

Smokers, particularly youth, are very price-sensitive[57]; therefore, ENDS and ENDS solutions should be taxed at a rate sufficient to discourage their use among youth and at a level not less than state and federal taxes on conventional cigarettes.

d. Apply funds for public health initiatives to protect youth and to study the health effects of ENDS on users and nonusers.

Research demonstrating the adverse health effects of conventional cigarette use and exposure took decades, while millions of youth and adults died of tobacco-related diseases. It is critical that the funding and development of research on ENDS, ranging from basic science of exposure to effects on public health and youth initiation, progress as

quickly as the increase in youth ENDS use. Research funding should also focus on public health initiatives, including outcomes evaluations.

CONCLUSIONS

ENDS use is rapidly increasing among youth and, according to the most recent data, ENDS are the most common tobacco product used among youth. ENDS use has the potential to addict youth to nicotine. There are potential health harms to nonusers of ENDS because of its toxicants, including nicotine, carcinogens, and metal particles found in the secondhand and thirdhand aerosol. There has been an increase in unintentional exposures of children with acute nicotine poisoning from a concentrated nicotine–containing ENDS solution, with at least 1 child death from unintentional ingestion of an ENDS solution.

The increasing use of ENDS among youth threatens 5 decades of public health gains in successfully deglamorizing, restricting, and decreasing the use of tobacco products. Health claims of ENDS as smoking cessation aids are currently unsupported by scientific evidence. There is a crucial need for effective local, state, and federal regulation to protect children and youth from ENDS use and exposure to ENDS secondhand and thirdhand aerosol and concentrated nicotine solution.

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ABBREVIATIONS

AAP: American Academy of Pediatrics
e-cigarettes: electronic cigarettes
ENDS: electronic nicotine delivery systems
FDA: US Food and Drug Administration
NYTS: National Youth Tobacco Survey

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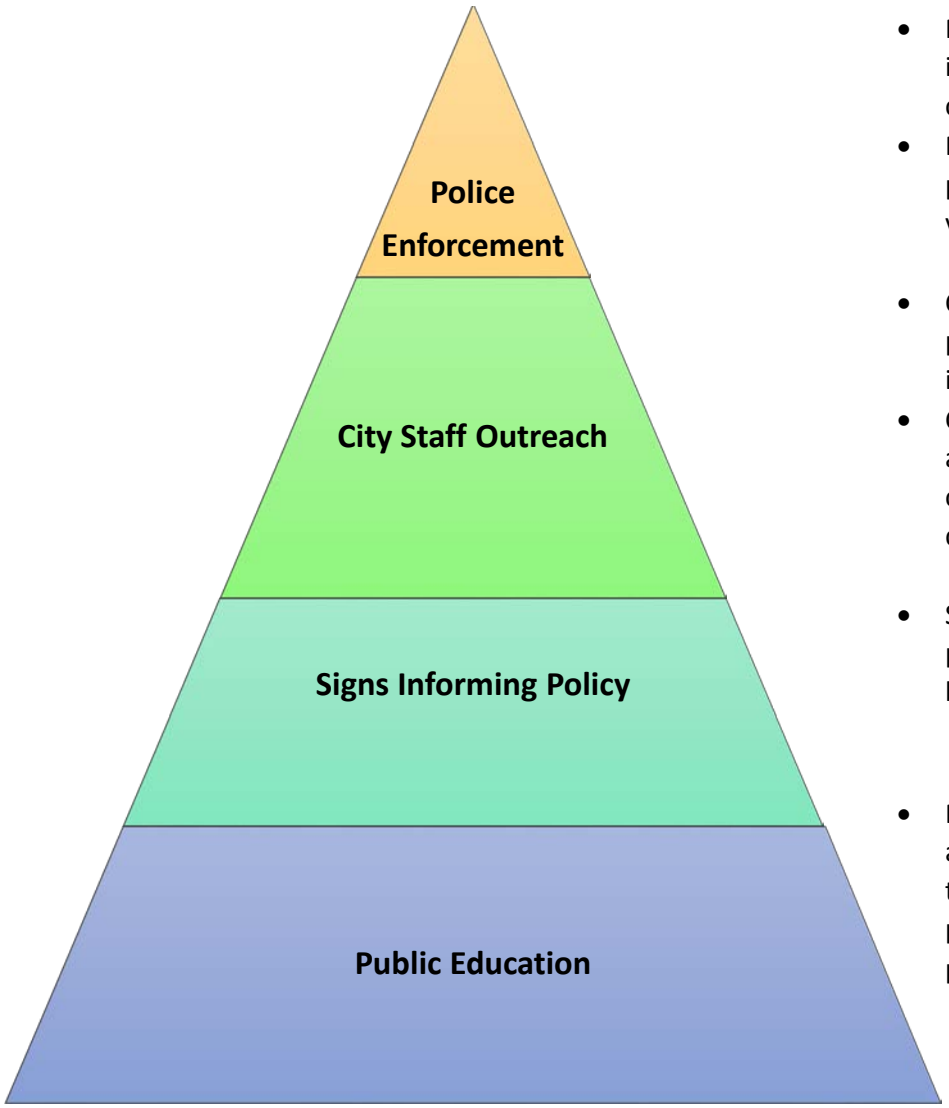
Model for Enforcement of Local Tobacco/Nicotine Policies

Strategies for local municipalities to ensure compliance and enforcement of smoke-free and vape-free laws.

Strategies at the bottom of the pyramid reach the most amount of people and rely heavily on community and individual compliance. At the tip of the pyramid are strategies for use when compliance is not being met and more legal action is needed. For more information about this model please contact Christa Timmerman at timmerca@larimer.org

Strategies



Implementation

- Police write warnings or tickets for individuals or businesses not complying with the policy
- Problem areas can be visited if issues persist or if other laws are being violated.

- Code enforcement informs the public/businesses about compliance issues and offer warnings.
- City Staff inform citizens of the policy and refer to city code through signs or contacting the code enforcement department

- Signs clearly state the policy; signs are provided to city properties and local businesses that would like them

- Public education includes a variety activities to get information out about the policy out to public including: press releases, advertisements, presentations, social media, etc.

City of Loveland
Youth Advisory Commission

LARIMER COUNTY
COMMITTED TO EXCELLENCE

E-cigarettes and Vaporizers in Public Places

Loveland City Council Study Session
Loveland Youth Advisory Commission

Billie Anna Runions, Oliver Byles, & Brandon Lindsey

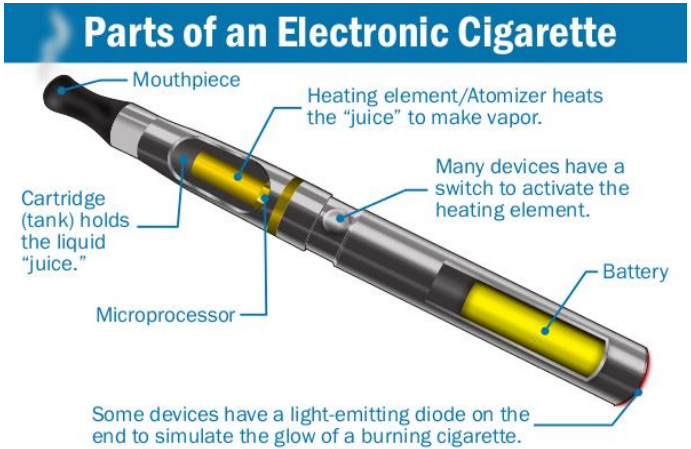
April 12, 2016

City of Loveland
Youth Advisory Commission

City of Loveland
Youth Advisory Commission

What are they?

- E-cigarettes and vaping devices (ENDS or ESD) are battery-operated products that can deliver nicotine, flavorings, or other chemicals through an aerosol (a.k.a vapor) that is inhaled by the user and exhaled into the environment.



(FEMA)

City of Loveland
Youth Advisory Commission

Purpose

- Add E-Cigarettes to Smoking Ordinance
- Protect and Improve the Community's Health
    - Limit involuntary exposure to e-cigarette/vaporizer aerosol

(Mike Mozart from Funny YouTube, USA)

City of Loveland
Youth Advisory Commission

Key Issues

Health and Clean Air for Everyone

- No regulation
- Secondhand exposure
- Nicotine and marijuana use
- Social norms

(Vaping360)

City of Loveland
Youth Advisory Commission

No Regulation

- Food and Drug Administration
- Ingredients
- Marketing and appeal to youth
- No warning labels
- Nicotine poisoning
- Exploding batteries
- Not approved as a quit method

(VapnFagan)

Vapor Shark E-Cigarette Billboard, Florida, 2013

City of Loveland
Youth Advisory Commission

Secondhand Exposure

- Colorado Clean Indoor Air Act
- Clean air rights
- Chemical exposure to aerosol
  - Potential for long-term consequences to brain development
  - Exposes "at-risk populations such as children and pregnant women, to nicotine and other harmful toxicants"

(American Academy of Pediatrics 2015)

-Centers for Disease Control and Prevention

City of Loveland
Youth Advisory Commission

Marijuana Use

- Discrete marijuana use
  - No odor
  - Indistinguishable devices
  - Youth and young adult use
- Secondhand exposure
- Colorado Marijuana Laws
  - No public use

Vaporizer that converts to use Marijuana products
(Larimer County Dept. of Health and Environment)

"Vaporizers are very difficult to detect even when they contain banned substances. This creates a dangerous subculture for youth to experiment without the fear of getting caught."

-Loveland Middle School Counselor

City of Loveland
Youth Advisory Commission

Social Norm of Nicotine Use

- Millennials' cigarettes
  - 14.5% of Larimer County youths reported ever using e-cigarettes (Healthy Kids Colorado Survey 2013)
  - Use has tripled among middle and high school students from 2013 to 2014 (Centers for Disease Control and Prevention 2015)
- "Cool" public perception
  - Marketed as "Safe alternative"
  - Public use = acceptable behavior
- No education about health consequences

(CDC:E-cigarette Ads and Youth)

City of Loveland
Youth Advisory Commission

Community Concerns

- Vape Shop commerce
  - Will be excluded from ordinance
- Marketed as quit aid
  - Not approved for use as quit aid
- User rights vs non-user rights
  - Clean air rights

(Roswell Park Cessation Services)

City of Loveland
Youth Advisory Commission

Recommendations

- Modify definition of smoking to include e-cigarette use
- Restrict use of ESDs in all public settings where traditional smoking is prohibited
  - Provide Enforcement (See Attachment Tobacco Enforcement Model)
  - Provide signs to city buildings and/or willing business
    - Larimer County Health Dept. can provide ~$1,500 to use for signage and/or education materials
  - Educate the public about electronic cigarettes and the policy

City of Loveland
Youth Advisory Commission

Local Survey Data (2016)

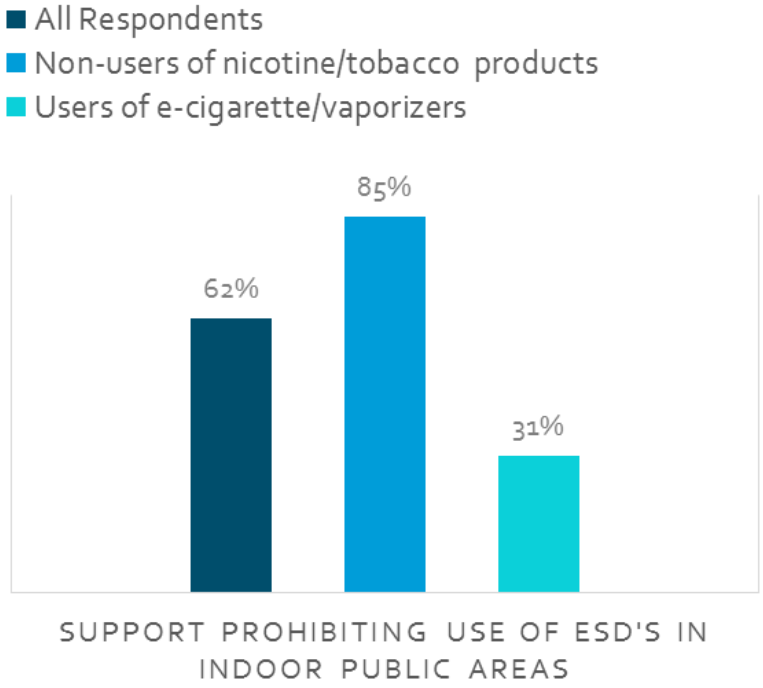
- 377 Total Responses
  - 154 e-cigarette/vaporizer users (41%)
  - Actual rate of users in Larimer County is approx. 5% of total population

    (Health District of Northern Larimer County Survey 2013).
- 3 out of 4 people report seeing e-cigarette use some days or every day

"If people are wanting to enjoy the vaporizers and other tobacco products, that is their choice. But when it affects the health of others, that's where I have an issue with their choices…"

-Loveland Public Opinion Survey Respondent

Policy Support



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Future Policies to Consider

- Parks and Trails
- City Property
- Public Patios
- Downtown Zone
- Tobacco Retail Licensing

(Reporter Herald, Jenny Sparks)

City of Loveland
Youth Advisory Commission

Questions

- Do you have questions for us?
- Questions for City Council:
  - What information do you still need to make a decision?
  - What are the next steps?

THANK YOU

City of Loveland
Youth Advisory Commission

AGENDA ITEM: **2**
MEETING DATE: 4/12/2016
TO: City Council
FROM: Karl Barton, Development Services
PRESENTER: Karl Barton, Development Services

TOTAL AGENDA ITEM TIME: 60 minutes

TITLE:
Create Loveland

SUMMARY:
This is an information only item. The purpose of this study session is to update and familiarize the City Council with the new Comprehensive Plan, Create Loveland, before it is brought to the Council for an adoption hearing. The Plan seen here was subject to extensive review and vetting by the Planning Commission and was unanimously recommended for approval at a Planning Commission public hearing on February 22, 2016. This presentation will provide a high level overview of the Plan features and organization and the process used to develop it.

BACKGROUND:

PUBLIC PROCESS
The Create Loveland plan document is the culmination of a two year process centered on a robust public engagement program. Overall, there were more than 3500 pieces of public input taken and used during the drafting of the Plan. The public input is reflected in the Plan Elements, Policies and Supporting Strategies which are based on what the planning team heard from the public are the important areas to focus on as Loveland grows.

The planning team held many events specifically to engage with the community about Create Loveland, as well as attended many public events. There was also an on-line outreach presence that allowed people to provide feedback on the Plan at their leisure. A Stakeholder Committee consisting of 20 members from across the Loveland community met to have detailed conversations about the direction and content of the Plan. A Technical Advisory Committee consisting of City staff provided input on the Plan from an internal and professional perspective.

PLANNING COMMISSION

The planning team worked extremely closely with the Planning Commission in the creation and drafting of the Plan. Seven study sessions we held with the Planning Commission, including three in the final months of the Plan drafting process. At these study sessions, the Plan was reviewed in detail and revisions were made to respond to Planning Commission comments. This close working relationship resulted in a Plan that received a unanimous recommendation for approval from the Commission on February 22nd.

CREATE LOVELAND

As Loveland's new comprehensive plan, Create Loveland provides a road map for protecting and enhancing Loveland's quality of life and economic vitality as it grows. It is an *advisory*, not regulatory document that depicts the general location, type, and intensity of future development, as well as the policies that will be used to guide growth and inform decision making. It will mostly frequently be used when evaluating annexations and re-zonings. It will also be used in the

creation of important infrastructure plans such as the transportation master plan and raw water master plan.

The Comprehensive Plan is a visible public statement communicating a community's vision and priorities to interested parties. It addresses a community's needs and wants and analyzes the opportunities for and barriers to achieving them. It directs the infrastructure and other investments that a community will make. It seeks to balance the need to provide certainty to stakeholders and community members about what they can expect their community to look and feel like in the future while at the same time providing the flexibility for decision makers to respond to current conditions when evaluating alternatives.

PLAN FEATURES AND ORGANIZATION

Loveland's last comprehensive plan was completed in 2005. Since that time there have been many changes to the Loveland community and the larger environment within which it sits. To help Loveland prosper through these changes, Create Loveland focuses on land use and the built environment and features a new future land use plan as well as Policies and Supporting Strategies designed to achieve the community's vision. Also included within the Plan is an examination of the impact of the built environment on public health, threats to the City's economic and strategic wellbeing, a look at the fiscal impacts of Loveland's growth and development pattern, an interweaving of community design elements, and metrics to measure Loveland's progress towards its goals.

Create Loveland is based around nine **Plan Elements** (Chapter 2) plus a **Future Land Use Plan** (Chapter 3).

The 9 **Plan Elements** are:

1. A Commitment to A Downtown Renaissance
2. Revitalize Our Corridors and Gateways
3. Cultivate Vibrant Economic Centers
4. Create a Safe and Healthy Built Environment
5. Celebrate Our Natural Assets in an Urban Setting
6. Create a Connected and Accessible Community
7. Facilitate Complete Neighborhoods
8. Invest in Loveland's Older Neighborhoods
9. Strengthen Loveland's Strategic Roles in the Community & Region

Within each Plan Element are a set of Policies and within each Policy are sets of Supporting Strategies designed to achieve and implement the Policy in a way that is consistent with Loveland's vision and values.

The Land Use Plan is contained in Chapter 3. It contains a Future Land Use Map, descriptions of the Land Use Designations, and a Suggested Future Land Use Map. The Land Use Map adds flexibility in strategic opportunity areas through the addition of Overlay Land Use Designations. The Suggested Land Use Changes Map indicates opportunities to make changes to the base land use map that were identified through the Create Loveland planning process, but need to be officially adopted through a site specific process. Chapter 4 focuses on plan implementation, including amendment procedures and community indicators. An additional implementation tool are the potential work items listed in Appendix A.

NEXT STEPS

After this study session, any comments received will be addressed and then the Plan will be scheduled for a public adoption hearing.

REVIEWED BY CITY MANAGER:

LIST OF ATTACHMENTS:

1. Create Loveland Adoption Draft
2. Staff presentation

CREATE LOVELAND

City Council Study Session

April 12, 2016

Planning Process

- Close review by PC
- Recommended for Approval on
  February 22nd
  Unanimously
- Familiarize Council with Plan

Public Process

3,500 Interactions over 50 events

Online Outreach

Attendance at events (Fire & Ice Festival, Farmers' Markets)

Open Houses

Interviews

Committees and Commissions

Stakeholder Committee

Technical Advisory Committee

Boards and Commissions

7 Planning Commission
Study Sessions

What is the Comprehensive Plan

Advisory document

Roadmap – Type, Location, Character, Density

Basis of other city plans

Implemented by further Council action

What's New

Update Community Vision

Plan Elements, Policies, and Supporting Strategies - Focused on Land Use

Health and the Built Environment

Updated Land Use Designations / Overlays

Indicators

Next Steps

Respond to comments

Approval hearing: TBD

AGENDA ITEM: **3**
MEETING DATE: 4/12/2016
TO: City Council
FROM: Marcie Erion, Economic Development
PRESENTER: Marcie Erion, Economic Development
Samantha Wester and Michael Thomas, Rayeman Elements Inc.

City of Loveland

TOTAL AGENDA ITEM TIME: 45 minutes

TITLE:
Business assistance request from Rayeman Elements Inc.

SUMMARY:
This is an initial discussion of a business assistance request on behalf of Rayeman Elements Inc. They are looking to locate their production and research operations at the Rocky Mountain Center for Innovation Technology

BACKGROUND:
Rayeman Elements Inc. (REI) has approached the City of Loveland about a business assistance package. The company was formed in 2011 and currently has four plants operating in Kansas, Texas and Nebraska with the plan of adding two facilities in 2016: one of these two potentially located at the Rocky Mountain Center for Innovation and Technology (RMCIT), Building A. REI is focused on the production of a patented cattle feed product and revolutionary extrusion process which increases the nutritional value of the feed and is able to be transported with minimal losses. It nutritionally outperforms any feed supplement currently being produced. The technology is extremely disruptive and embodies countless other applications for multiple industries.

The proposed facility at RMCIT will focus on the development and optimization of current processes and the research of new applications and commercialization opportunities. REI is also in negotiations with a client to move a high volume feed production to Northern Colorado which would be co-located at RMCIT, Building A. It would serve as a test site for refinements to the existing technology. Projected growth is in the double digits over the next five years.

The phasing of the lease is as follows:

Spring 2016	20,000 square feet leased
August 2016	50,000 square feet leased
December 2016	75,000 square feet leased
December 2017	100,000 square feet leased
December 2018	140,000 square feet leased- All of Building A at RMCIT

The project fits the guidelines in the City of Loveland Incentive Policy as during this time they plan to hire 50 people at an average wage of $75,000 (over 150% of Larimer County average wage). REI anticipates 20 of the new hires will be in R&D and Engineering and 30 will be manufacturing positions. The REI anticipated project valuation, at full buildout, is $12 million including tenant finish and equipment purchases. The Economic Impact Analysis generated yielded an impact of about $200,000 over a five year period and close to $500,000 over a ten year period.

REI is very interested in RMCIT but continues to explore other properties as well. They are negotiating both a five year and a ten year lease. The company has requested up to $225,000 of assistance to offset expenses. The fee estimate is approximately $150,000.

Staff recommends the following:

- $150,000 assistance package - Waiving Building permit fee and City use tax waivers first and then filling the gap with cash if needed (based on a five year lease)
- $225,000 assistance package - Waiving Building permit fee and City use tax waivers first and then filling the gap with cash if needed (based on a ten year lease)
- Any funding gap that exists to be paid from the Economic Development Department Incentive Fund
- The current balance of the Incentive Fund is $913,948 (contingent upon rollover approval in April)

Options considered:

- Waive only Building Fees and City Use Tax waivers associated with tenant finish, no gaps filled with cash
- Cash only
- Combination of fee waivers and cash

The redevelopment of the RMCIT as a high tech campus continues to be a priority for City Council with the focus on attraction of primary jobs such as these. The addition of a cutting-edge manufacturing company to Loveland also aligns with the City Council's support of Advanced Manufacturing initiatives. These benefits combined with the occupancy of an entire building at the campus brings desired economic growth to the community and will act as a catalyst for further tenancy of the facility.

STRATEGIC ALIGNMENT-

Support for this assistance request is consistent with the Economic Development Strategic Plan:

Goal #1- Make Loveland the Heart of Innovation and Creativity in Colorado

Goal #3- Make the Right Investment easy to Come, Stay and Grow

REVIEWED BY CITY MANAGER:

William D. Cahill

LIST OF ATTACHMENTS:

1. Letter of Request
2. Presentation Slides

www.rayemanelements.com

RAYEMAN ELEMENTS INC
INNOVATION APPLIED
PHONE: 308-217-1154

Mr. Bill Cahill
Loveland City Manager
500 East Third Street
Loveland, CO 80537

Dear Bill,

Please allow this letter to serve as a formal request on behalf of Rayeman Elements, Inc. for assistance from the City of Loveland in our efforts to relocate our offices, R&D facilities, and future production plant to the Rocky Mountain Center for Innovation and Technology.

Rayeman Elements, Inc. (REI) has developed and patented a revolutionary extrusion process that produces cattle feed which allows 100% of the nutritional value of the feed stock to be delivered to the ranchers. The feed is produced in a form that can be transported with minimal losses through breakage, outperforming any other feed product on the market.

This proprietary process has other applications, both in other types of feed and in other industries. REI proposes to install an R&D facility in which our engineers will develop and optimize our current processes, work on developing new applications, and take those new applications from development to commercial production.

REI is also in negotiations with a potential client to locate a high volume feed production facility in the northern Colorado area, with an equipment valuation in excess of $12 million. REI proposes that this facility be located in Building A, where it would also serve as a test bed for refinements to our existing technology. Between the three initiatives, REI's proposed venture would take up the majority of Building A's 142,000 sq ft of floor space; we would be looking at a lease of 10 years.

In consideration of this, REI is requesting Business Assistance from the City of Loveland, in the form of waiver or reimbursement of City fees, in an amount not to exceed $225,000.

REI extends our sincerest thanks to the City of Loveland and the City Manager's Office for your consideration of this request. We are very excited at the prospect of becoming part of the Loveland community, and helping to bring innovation and economic development to the Colorado area.

Sincerely,

Samantha Western, President
Rayeman Elements, Inc.
308-746-3358

Tel: 308-217-1154
Fax: 308-217-1154
P.O. Box 242
Cozad, NE 69130
www.rayemanelements.com
samantha@rayemanelements.com

RAYEMAN ELEMENTS

Innovation Applied

OVERVIEW

- Rayeman Elements Inc. (REI)
- REI's History
- REI's Future
- REI's Technologies
- Rocky Mountain Center for Innovation and Technology
- Impact Study
- City of Loveland Partnership
- Where do we go from here?

WHO IS RAYEMAN ELEMENTS?

- Rayeman Elements Inc. (REI) is a passionate group of Entrepreneurs, Inventors & Engineers. We take problems and find solutions. We turn Ideas into reality.

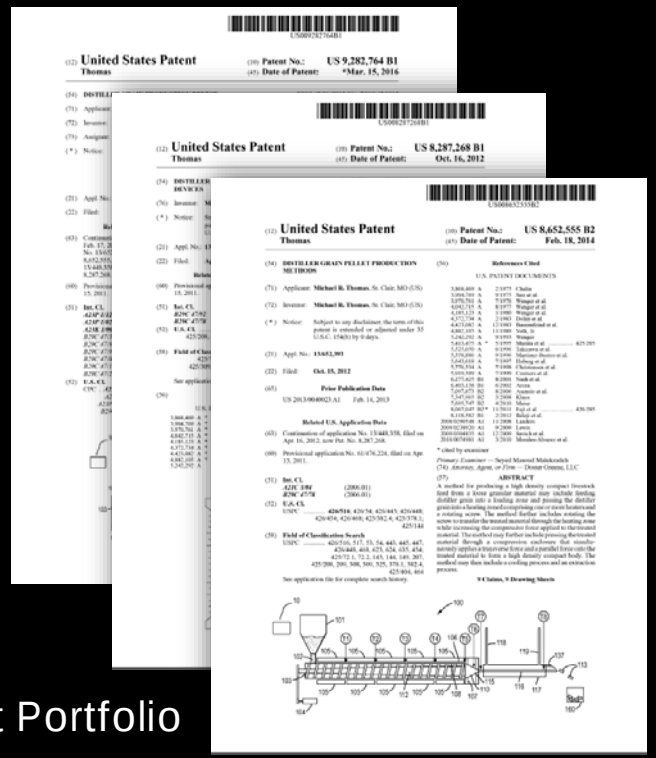
- REI is;

  Technology Focused.

  Product Driven.

  Dedicated to the Pursuit of Intellectual Property (IP).

  A Company with a Limitless Future.



Extensive Patent Portfolio

WHERE DID REI COME FROM?

- REI was Founded in 2011
- REI was co-founded by:
  - Samantha Western (President) Former business owner and entrepreneur.
  - Mike Thomas (Dir. of Technology) Inventor with 9 patents, 38 pending.
- REI combines strong entrepreneurship with a dominant inventors spirit.
- REI has spent the last 5 years developing and proving their technology.
- REI is now positioned to take over the Supplemental Cattle Feed manufacturing market, as well as release countless technologies into multiple markets.

WHERE IS REI GOING NOW?

- REI will Implement a Research and Development Lab in Colorado.
- REI will establish its headquarters in Colorado.
- REI will build a Beef Cattle Feed Manufacturing facility in Colorado.
- REI will construct their equipment manufacturing facility in Colorado.
- REI will continue to develop new technologies, processes, and products.

THE TECHNOLOGY

BULK DENSIFICATION

WET DISTILLERS GRAIN DRYER

HIGH VELOCITY CRYOGENIC EXTRUSION COOLING

STRUCTUAL COMPOSITES FOR HOME BUILDING PRODUCTS

BULK DENSIFICATION

ANIMAL FEED

Many opportunities are available in the feed market

- **Beef Cattle Feed**
- **Swine Feed**
- **Diary Cattle Feed**
- **Poultry Feed**
- **Dog Food/Treats**

BIO-MASS/RENEWABLE & BURNABLE ENERGY

Grain waste materials such as Corn Stover, Bean Stubble, DDGS, etc. can be used for:

- **Burnable Pellets to replace coal in power plants**
- **Burnable Pellets be used in home furnaces.**

TRANSPORTATION

Substantial cost savings by shipping densified vs. loose materials.

ANIMAL FEED

Beef Cattle Feed Production (Range Cube)

Raw DDG

REI's Patented Twin Screw Extruder

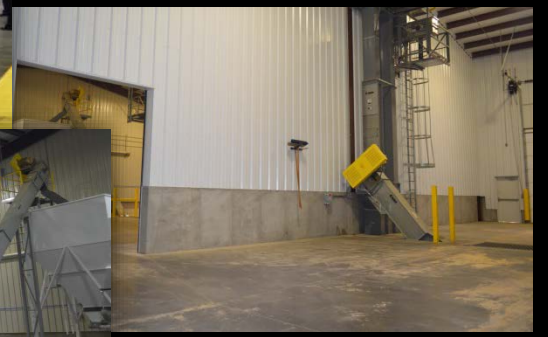
Production Rate up to 5,000lbs/hr

Highest Quality Range Cube (100% DDG)

RANGE CUBE PRODUCTION

Four Operational Plants:

Lexington NE Lyons KS Lubbock TX Ord NE



FEED TUB PRODUCTION

Fully automated tub line, Lyons KS

- Tub Density controls Consumption Rate
- 100% DDG

Guaranteed Consumption Rates

¼ lb

1 lb

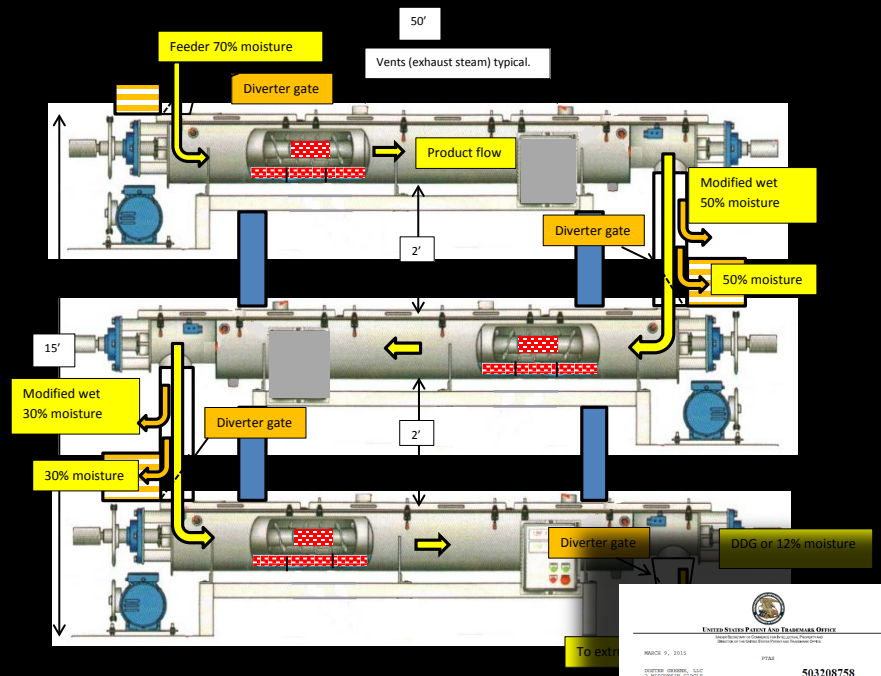
3 lb

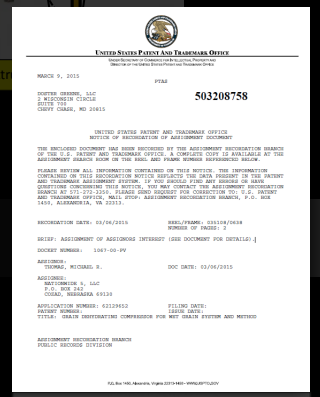
5 lb

Per head of cattle per day

GRAIN DRYER

- Significantly Lower Capital Costs
- Safer Process (non explosive)
- No VOCs, Easy EPA approval
- Increased Production Rates
- Better Tasting by not burning grain
- Lower Operating Costs
- Creates Modified Distillers for option grain markets
- Does not Require Steam (Boiler System)
- Does not Require a Scrubber System
- Simple to Operate (User Friendly)
- Requires much Smaller Footprint
- Easily expandable to increase capacity

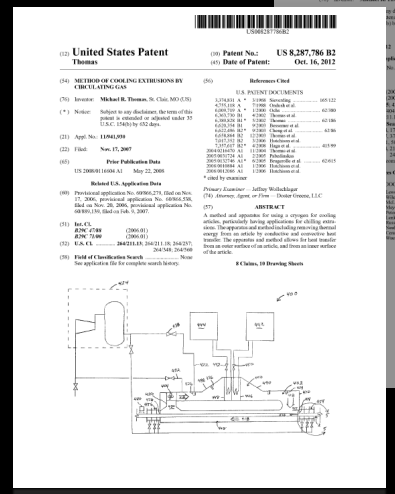


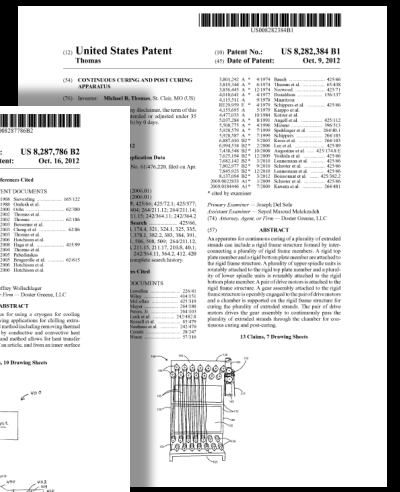


Patent Pending

HIGH VELOCITY CRYOGENIC COOLING

- A new technology for cooling extrusions.
- Increases production with same real estate
- Minimizes energy consumption.

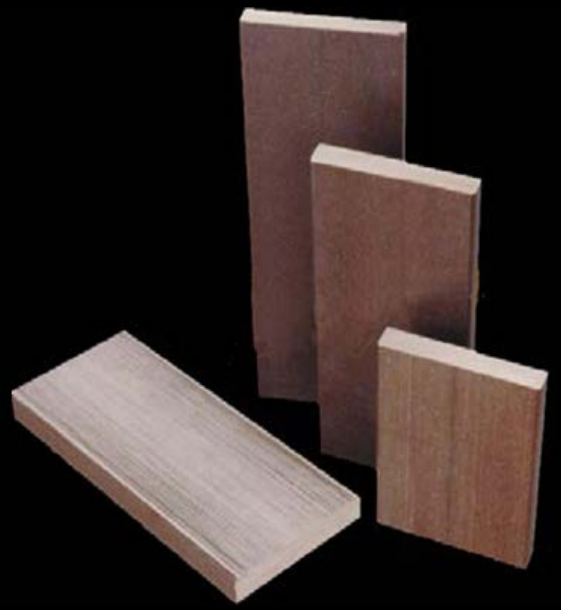




Patented Technology

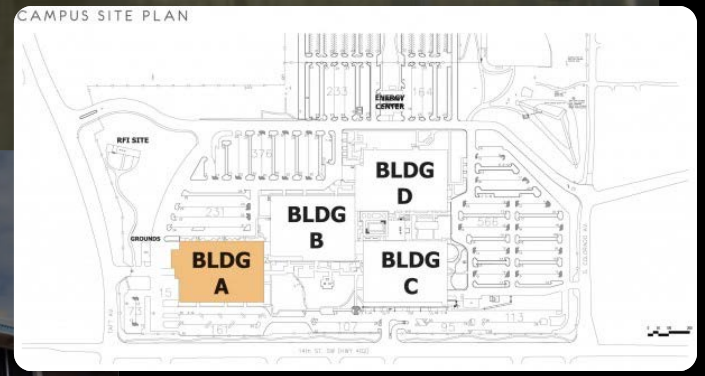
STRUCTURAL COMPOSITES FOR HOME BUILDING PRODUCTS (DDGS/PLASTICS)

- Decking
- Fencing
- Siding
- Pipe
- Window Frame
- Structural Components, i.e. a 2” x 4”



ROCKY MOUNTAIN CENTER FOR INNOVATION AND TECHNOLOGY

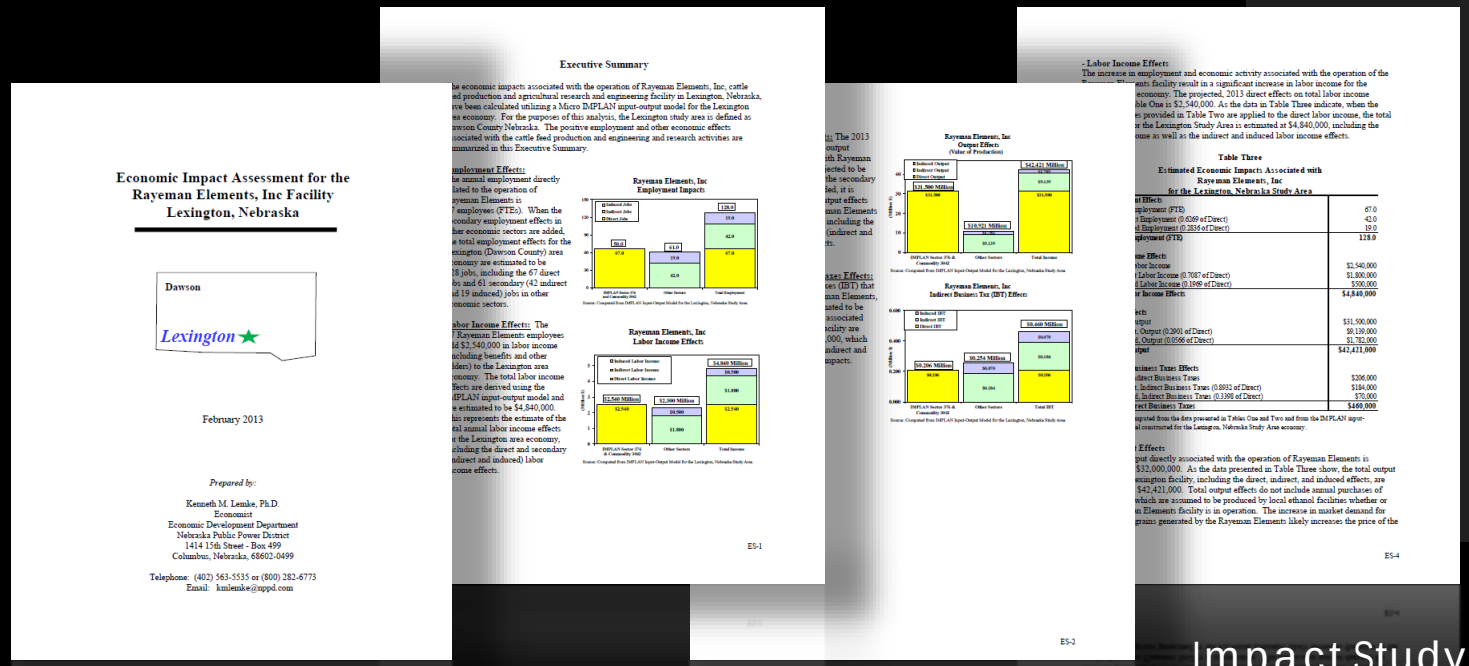
- Desired R&D lab location
- Desired production facility for beef cattle feed
- Will be an Anchor company by occupying 1 entire building.
- Will attract additional businesses



Revitalization of this site will have an enormous positive impact on the SW corner of Loveland. REI could be the turning point for RMCIT

CITY IMPACT STUDY

- An impact study was conducted by the City of Lexington NE.
- The study showed that REI has a positive effect on their community.
- This study only considered the installation of 1 DDG, range cube production facility.



REI's master plan for Loveland

1 R&D Facility
1 Production facility
1 Headquarters
1 Manufacturing facility

Therefore the positive impact to the City of Loveland will be **4** times that of Lexington.

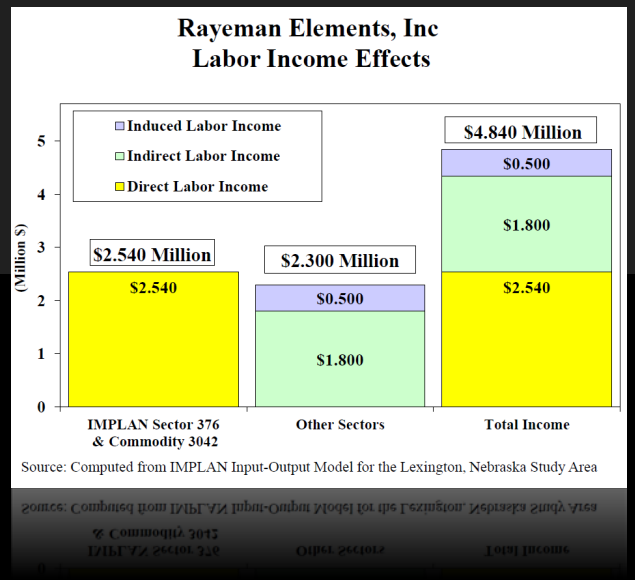
Impact Study, Lexington NE 2013

IMPACT STUDY

Highlights

Labor Income

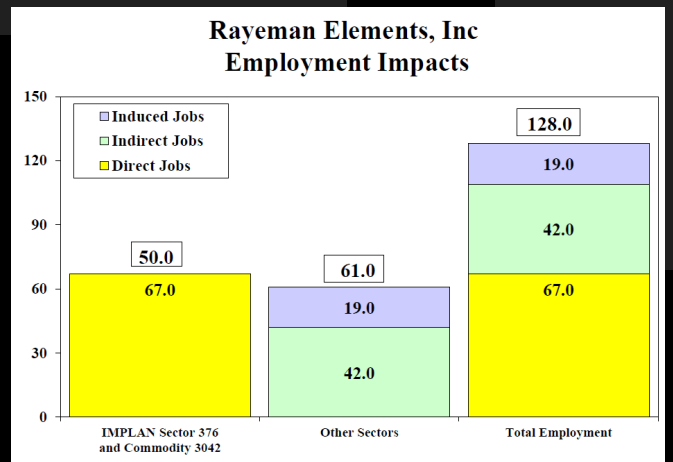
Direct income **$2.5 Million**,
Indirect income **$1.8 Million**,
Induced income **$.5 Million**
Total Labor Income **$4.84 Million**



Source: Computed from IMPLAN Input-Output Model for the Lexington, Nebraska Study Area

Output Effects

Direct output **$31.5 Million**,
Indirect income **$9.13 Million**,
Induced income **$1.78 Million**
Total output **$42.42 Million**



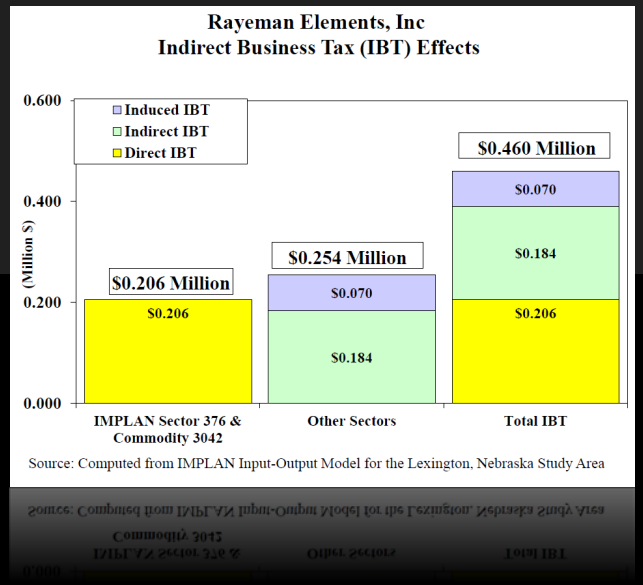
Source: Computed from IMPLAN Input-Output Model for the Lexington, Nebraska Study Area.

IMPACT STUDY

Highlights

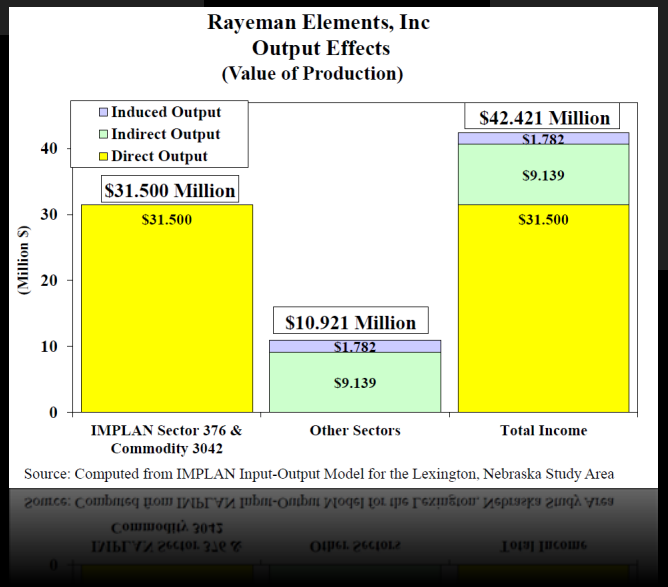
Indirect Business Tax (IBT) Effects

Direct IBT **$.2 Million**
Indirect IBT **$.18 Million**
Induced IBT **$.07 Million**
Total IBT **$.46 Million**



Job Creation

Direct Jobs **50**
Indirect Jobs **42**
Induced Jobs **19**
Total job creation **128**



CITY OF LOVELAND

A mutually beneficial relationship

- It is important to REI that we establish a partnership with the community which will be our home.
- This partnership will be beneficial to all involved.
- As REI grows in the community, our goal is to create a synergistic relationship with the City of Loveland.
- Based on previous impact studies, REI brings significant growth potential to the community which it calls home.

WHERE DO WE GO FROM HERE?

- REI's mission is to create jobs and new markets with our products, change the way waste or by-products are viewed and allocated, and make a global impact in the bioenergy, recyclable, and farming worlds, just to name a few.

- With our headquarters in Colorado, REI is poised to take our knowledge and technology worldwide and truly make a difference where it is needed the most.

- In continuing our 100% success rate of all new products tried and developed, we feel the possibilities for a successful future are immeasurable.

QUESTIONS